Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

LIBRARY
RECEIVED
★ AUG 10 191
U. S. Department of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
BULLETIN No. 623
Contribution from the Bureau of Plant Industry
WM. A. TAYLOR, Chief

Washington, D. C. PROFESSIONAL PAPER July 22, 1918

CITRUS-FRUIT IMPROVEMENT A STUDY OF BUD VARIATION IN THE WASHINGTON NAVEL ORANGE

By

A. D. SHAMEL, Physiologist in Charge, L. B. SCOTT, Pomologist, and
C. S. POMEROY, Assistant Pomologist, Fruit-Improvement Investigations,
Office of Horticultural and Pomological Investigations

CONTENTS

	Page
Introduction	1
History of the Washington Navel Variety	2
Variability within the Variety	3
Occurrence and Frequency of Bud Variations	5
Objects of the Investigations	7
Plan of the Investigations	7
Methods of Keeping Performance Records	9
Descriptions of Some of the Important Strains	14
Individual Fruit Variations	24
Minor Variations of Fruits	27
Lessons Taught by These Investigations	27
Presentation of Data	29
Comparative Value of the Strains	140
The Unintentional Propagation of Undesirable Strains	141
The Isolation of Strains through Bud Selection	142
Top-Working Undesirable Trees	144
Summary	145

WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 623

Contribution from the Bureau of Plant Industry
WM. A. TAYLOR, Chief

Washington, D. C. PROFESSIONAL PAPER July 22, 1918

CITRUS-FRUIT IMPROVEMENT: A STUDY OF BUD VARIATION IN THE WASHINGTON NAVEL ORANGE

By A. D. SHAMEL, *Physiologist in Charge*, L. B. SCOTT, *Pomologist*, and C. S. POMEROY, *Assistant Pomologist, Fruit-Improvement Investigations, Office of Horticultural and Pomological Investigations.*

CONTENTS.

Page.
Introduction 1
History of the Washington Navel variety 2
Variability within the variety 3
Occurrence and frequency of bud variations. 5
Objects of the investigations 7
Plan of the investigations 7
Methods of keeping performance records 9
Descriptions of some of the important strains. 14
Individual fruit variations 24

Page.
Minor variations of fruits 27
Lessons taught by these investigations 27
Presentation of data 29
Comparative value of the strains 140
The unintentional propagation of undesirable strains 141
The isolation of strains through bud selection. 142
Top-working undesirable trees 144
Summary 145

INTRODUCTION.

The Washington Navel orange is the most important citrus variety grown in California. The total orange crop of the State, based upon the shipments of a normal year, is about 39,500 carloads, of which approximately 27,000 cars are of the Washington Navel variety.[1] In the report of the general manager of the California Fruit Growers' Exchange for the year ended August 31, 1916, it is stated that a total of 37,229 cars of oranges and grapefruit was shipped from California during that period. The grapefruit crop amounted to about 300 cars. It is also stated in this report that the California Valencia orange crop of the year under discussion would amount to between 13,000 and 14,000 carloads. No mention is made of the size of the crops of the Mission Sweet Seedling, Mediterranean Sweet, St. Michaels, Bloods, and other varieties, which are now grown to only a very limited extent in California, probably not to exceed 1,500 carloads annually. From these figures it can be seen that the Washington Navel orange crop for the year 1916 was probably between 21,500 and 22,500 carloads. In northern and central California, the Washington Navel variety is shipped largely during the months of November, December, and January, while in southern California the crop is mostly shipped from January to June, inclusive. Owing to large plantings of this variety in northern and central California which have not yet come into full bearing, it seems likely that its production in the State will be increased in the near future.

---

[1] Wallschlaeger, F. O. The world's production and commerce in citrus fruits and their by-products. Citrus Prot. League, Cal., Bul. 11, p. 70. 1914.

The Washington Navel orange besides contributing such an important part to the citrus industry of California is extensively cultivated in the region of its nativity, Bahia, Brazil, and is grown commercially in Australia, South Africa, Japan, and some other citrus-growing regions. This remarkable development has occurred well within the past century and most of it during the last 25 years.

HISTORY OF THE WASHINGTON NAVEL VARIETY.

The Washington Navel orange (*Citrus sinensis* (L.) Osbeck) originated at Bahia, Brazil, apparently as a bud variation from the Portuguese orange variety, laranja Selecta. This variety, commonly called the Selecta orange, probably introduced into Brazil by the early Portuguese explorers and settlers, is supposed to have come from India. In Brazil the Selecta orange produces fruits bearing seeds and is one of the important citrus varieties grown in the vicinity of Rio de Janeiro at the present time. The occurrence of navel fruit variations in many trees in these orchards is corroborative evidence of the origin of the navel variety as a bud variation from the laranja Selecta.

As nearly as can be ascertained, the navel orange variation was first propagated about 1820 at Bahia[1] by a Portuguese gardener, who is said to have been the first person in Brazil to propagate plants by budding. The superior value of the seedless navel oranges in comparison with the seed-bearing Selecta fruits was soon recognized by the Bahians, and at the present time the navel orange has almost entirely supplanted the parent variety in the orchards at Bahia. In 1914 about a thousand acres of navel-orange trees were being cultivated within the municipality of Bahia,[2] while only a few individual Selecta trees were to be found in that district.

In 1868 the late William Saunders, Horticulturist of the United States Department of Agriculture, learned through a correspondent then in Bahia, Brazil, that the oranges grown there were seedless and of a superior character. Arrangements were made for the importation of several of the trees for trial in the United States. When inspected at Washington all the trees in this shipment were found to be dead. From a second shipment, made in 1870, twelve living trees were received. Buds from these trees were propagated in one of the department greenhouses on orange stocks grown for this purpose and were distributed to growers in Florida and California.

---

[1] Interview with Dr. V. A. Argollo Ferrão, agricultural inspector of the Eleventh District, Bahia, Brazil, November, 1913.

[2] Estimate of the Brazilian agricultural exploring expedition of the United States Department of Agriculture, 1913–14.

In the distribution of these young budded trees, two of them were sent to Mrs. L. C. Tibbets, at Riverside, Cal., and were received and planted by her in 1873. One of these trees, shown in Plate I, was transplanted in 1903 from the Tibbets homestead to its present location in the courtyard of the Glenwood Mission Inn at Riverside.

When the two trees sent to Mrs. Tibbets came into bearing, about 1875, their fruits attracted much attention and aroused deep interest among many California citrus growers and propagators. The fine quality of the fruits, the absence of seeds, the distinctive navel mark, and many other striking characteristics led California citrus growers and nurserymen to propagate the variety very extensively. The commercial success of the fruit in the markets confirmed the judgment of the early propagators and growers as to the value of the variety. The propagation and planting of the navel orange in California have been carried on extensively during recent years, until now it is by far the most widely grown citrus variety in the State.

During the early stages of the development of this variety in California the name Bahia was proposed for it by Mr. Saunders. Other names were used locally, such as the Riverside Navel orange in the Riverside district. Because the two navel orange trees originally sent to California had been received from Washington, D. C., the name Washington was used frequently at first to designate the variety. After the trees fruited, this name was changed to Washington Navel. Gradually other names were abandoned and this name has since been used universally by citrus growers and others interested in the citrus industry.

In the selection of performance-record plats for these investigations, every possible care was taken to determine that the trees in the plats were the direct descendants of the two Tibbets trees. There is every reasonable assurance that all of the navel-orange trees used in these investigations are descendants of those trees and for the most part but two or three bud generations removed from the parent trees.

VARIABILITY WITHIN THE VARIETY.

A study of individual trees in several Washington Navel orange orchards in southern California begun by the senior writer in 1909 revealed the presence of several strains of trees and fruits showing marked and important characteristic differences. The term "strain" as here used designates a group of individuals of a horticultural variety differing from all other individuals of the variety in one or more constant and recognizable characteristics and capable of perpetuation through vegetative propagation.

One of the theories most frequently advanced to account for the tree and fruit variations observed in the orchards was the possibility that the roots of such trees, or some of them, might be in so-called "soil pockets," or be influenced by other local soil conditions. The orchards in which the investigational performance record plats are located are situated on narrow mesas between low hills and a deep arroyo. The soil of these mesas is decomposed granite which has been washed down from the hills. A great number of soil analyses were made of samples secured within the areas covered by the root systems of trees of all the strains under observation, and such areas were found to be very uniform in character and composition.

The influence of the stocks upon the scions was suggested as another possible cause of the frequent variability observed, but this idea was proved to be erroneous by the discovery of numerous cases where some of the most distinct strains were found in the same tree grown from a single bud and therefore upon the same individual stock. Later it was discovered that in the case of these diverse bud variations occurring in the same tree grown from a single bud, it was possible to isolate each of the important strains through bud selection in propagation, proving that the differences observed were true cases of bud variation.

This variability of the trees and fruits of the Washington Navel orange is of fundamental significance from the standpoint of the fruit grower and in any study of the conservation and the stabilization of the variety as a whole. In the product of some groves, many oranges are found to be so poor as to be wholly unfit for the market. This condition frequently has been due to the presence of trees of inferior strains in the groves. These inferior trees reduce the returns from the grove in some cases to a point where from this cause alone it is maintained at a loss. Many of the existing trees of the variable strains show unusually strong vegetative growth but a low production of fruit, which is of inferior commercial value. The poor commercial quality of this fruit is due in part to the following causes: Irregular and peculiar shapes not adapted to a proper arrangement in the ordinary commercial packages; undesirable and unattractive color; rough, ridged, corrugated, or ugly and uneven surfaces of the rinds; very thick peel; a large amount of coarse rag; a small amount of juice or juice of a sour and bitter flavor; or other fundamental inferior fruit characteristics. Trees of some of the strains were found to bear extremely large fruits, and in other instances very small fruits, both conditions being usually undesirable and unprofitable from the grower's standpoint. Considerable differences in the time of ripening of the fruits borne by the trees of some of the diverse strains in the same orchard were observed. This condition is objectionable in commercial orange growing, from the fact that frequently the differences in the ripeness of the fruits are not readily noticed by the pickers or packers.

On account of the presence of trees of inferior strains in the orchards, it frequently happens that fruit from them is shipped together with fruits of superior quality borne by trees of the best strain. Sooner or later the results of this condition are felt by the grower, and his fruit is sold with difficulty and at a low price. In order to maintain the reputation of a brand the grower must furnish regular and uniform supplies of good fruit to the consumer. In most cases in California brands are made up of the consolidated crops from many orchards. In order to standardize as much as possible the pack under such brands, it is necessary to use extreme care in assorting the oranges from the several groves from which the fruit is produced. From the standpoint of community endeavor this condition offers an additional reason for standardizing the fruit so far as practicable by the standardization of the trees in the groves through bud selection. The growing of inferior strains and the shipment of the fruits of these strains will sooner or later result in a loss of the reputation and prestige held by this variety.

The success of the Washington Navel orange is the foundation upon which the citrus industry of California has been developed. The importance of conserving the variety and maintaining it, now that its reputation has become established, must therefore be apparent to every thinking person.

OCCURRENCE AND FREQUENCY OF BUD VARIATIONS.

The total number of strains existing in the Washington Navel orange variety is unknown. Constant additions to the list are being made as knowledge of the variety grows and the extent of the investigations widens so as to include observations in a larger number of orchards and with a greater number of trees.

Thirteen important strains have been found in the investigational performance-record plats. Many other less marked departures from the Washington strain have been found from time to time, but are, so far as is now known, of little significance or importance in the consideration of methods for the stabilization of the variety by means of bud selection. These infrequent and less important variations therefore have not been included in the list of strains; but with a wider knowledge of these variations gained from actual experience it is possible that some of them may be found to be more important than they are thought to be at the present time.

The great amount of variability within the Washington Navel orange variety has been thought by some to be coordinate with the abnormal conditions of its flowers and fruits. Subsequent investigations of varieties of citrus fruits other than the Washington Navel orange have proved that all citrus varieties thus far studied are subject to the variability arising from bud variations in about the same degree as is the navel orange.

Naturally many differences in fruits and trees are the direct result of the effect of environmental conditions. These seasonal fluctuations probably are of no importance from the standpoint of heredity and the stabilization of the variety, as apparently they are not transmitted by budding. Performance records showing these differences are, however, important from the standpoint of an investigation of cultural practices, in that they offer direct and valuable evidences of the effect of cultural treatment or other environmental factors upon tree behavior. These investigations have shown clearly that in cultural experiments, such as those in fertilization, irrigation, or other soil treatments, and in pruning or other methods of tree care, the effects of these treatments can well be measured by means of individual-tree records both before and during the experimental period. Individual-tree performance records afford exact data from which to draw conclusions as to the results of such experimental work.

The extent of the occurrence of diverse strains of the Washington Navel variety in established bearing orchards was found in subsequent investigations to be much greater than was apparent in the preliminary study of this subject. The lowest percentage of off-type trees, i. e., marked variations from the best or Washington strain, found in commercial orchards, has been about 10 per cent, and the highest about 75 per cent, of the total number of trees in the orchard. These figures do not refer to the many variations in fruits observed in the trees of the Washington or best strain, many of which are probably different enough from the Washington fruits to be classed as true strains, but owing to our incomplete knowledge of the subject they are of necessity for the present included with the Washington strain fruits.

The name Washington has been adopted for the typical strain of the variety because it represents that type of tree and fruits which was originally intended for propagation by the growers. It is the strain upon which has been founded the reputation of the variety and which under present conditions is the most desirable from commercial and other standpoints for cultivation in California.

Tree-census observations in navel-orange orchards in California show a general average of about 25 per cent of trees of diverse strains, most of which are inferior to the Washington as regards both the amount and the commercial quality of the fruit. As a rule, the younger orchards show a larger proportion of trees bearing inferior fruits than the older orchards. This condition indicates that the prevailing methods used for the propagation of the Washington Navel orange variety are causing the deterioration or "running out" of the variety as a whole through the perpetuation of an increasingly large proportion of undesirables

OBJECTS OF THE INVESTIGATIONS.

The objects of these investigations are (1) to ascertain the variation which has taken place in the Washington Navel orange through bud variation; (2) to determine the extent to which undesirable variations have been propagated, as shown by the percentage of such undesirable trees existing in the present bearing groves; and (3) through improved methods of propagation to control the extent to which undesirable variations shall enter into the population of future commercial Washington Navel orange groves.

PLAN OF THE INVESTIGATIONS.

These investigations have been carried on by means of individual-tree performance records and observations.

The term "performance record" is used here to mean the record of the number and the commercial quality of fruits borne by individual trees during a period of years.

The term "performance-record plat," as used in connection with these investigations, means a group of trees grown under comparable conditions, selected for the purpose of determining the relative behavior of the trees by means of individual-tree records of production, observations, and descriptive notes and records.

The individual-tree performance records made during these investigations were secured by giving each tree a number, by marking the trees annually with cloth streamers to prevent their accidental picking by the regular ranch picking crew, by picking each tree separately and assorting its fruits according to grade and size, by weighing each lot of fruit of each size and grade, by counting the fruits of each lot, and by recording these data on forms arranged especially for this purpose. In preparation for the work of assorting the fruits the season of 1909 was largely spent in citrus packing houses studying the grading standards in use in such houses at that time. Preliminary to each season's work since then, similar studies have been made in order to true up and improve the judgment of the observer when securing the investigational performance records.

In order that the data might be secured from trees located in orchards where the conditions were suitable for carrying out this work, a careful study was made in 1909 of many orchards in those districts of California where Washington Navel oranges were most successfully grown. Some of the conditions considered most desirable in the location of the performance-record plats of navel-orange trees for use in these investigations were (1) the production of successful and profitable crops; (2) location on virgin land in order to eliminate any influence of previous cultural treatments; (3) the absence of any radical pruning or other tree treatments or cultural practices; (4) the absence or effective control of diseases or insect pests; (5) the location of plats on uniform soils where little or no fertilizer or manure had been used and where uniform irrigation and other cultural practices had been continuously followed during the entire history of the orchards; (6) a knowledge of the history of the buds used in the propagation of the orchards and the character or kind of stocks used; (7) protection from cold, high winds, or other climatic causes of tree injuries; (8) the prospect of a continuous ownership of the orchard for a series of years; and (9) as little as possible apparent variability of strain, so that the results obtained would be conservative and fairly representative of the behavior of the individual trees from the standpoint of the variety as a whole.

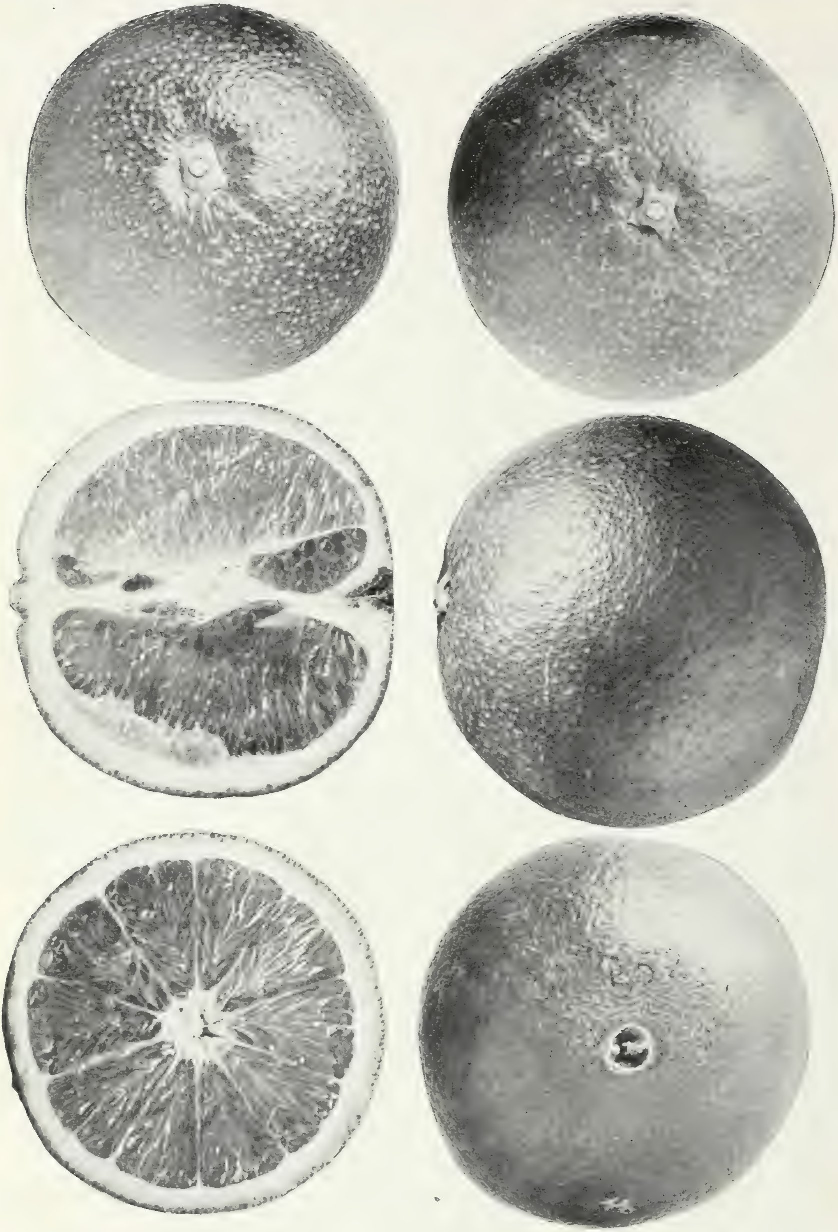
The preliminary survey of the Washington Navel orange districts made possible the selection of plats where these conditions were unusually uniform and particularly suitable for securing reliable and valuable data concerning individual-tree behavior. The ranches on which these plats were located are bounded on one or more sides by deep arroyos, thus providing good air drainage. In all cases these ranches are in the foothills and no other ranches are located above them, so that there was no possible influence on the performance-record trees from higher lying orchards or cultivated lands. All possible precautions were taken to provide against causes of individual-tree differences other than those resulting from individual-tree variability.

In the beginning it was considered most important to study the individual-tree variability within the Washington or best strain of the variety rather than to compare the behavior of the individual trees of the different strains. Later it was found to be equally important to consider the differences between strains arising from bud variations; therefore, plats selected subsequently were located mainly for the purpose of comparing the behavior of various strains of the variety. Inasmuch as the individual-tree performance-record work with the Washington Navel orange was, so far as known, the first investigation of this character with any citrus variety, the location of the plats was made without the knowledge which has since been

P930A—HP

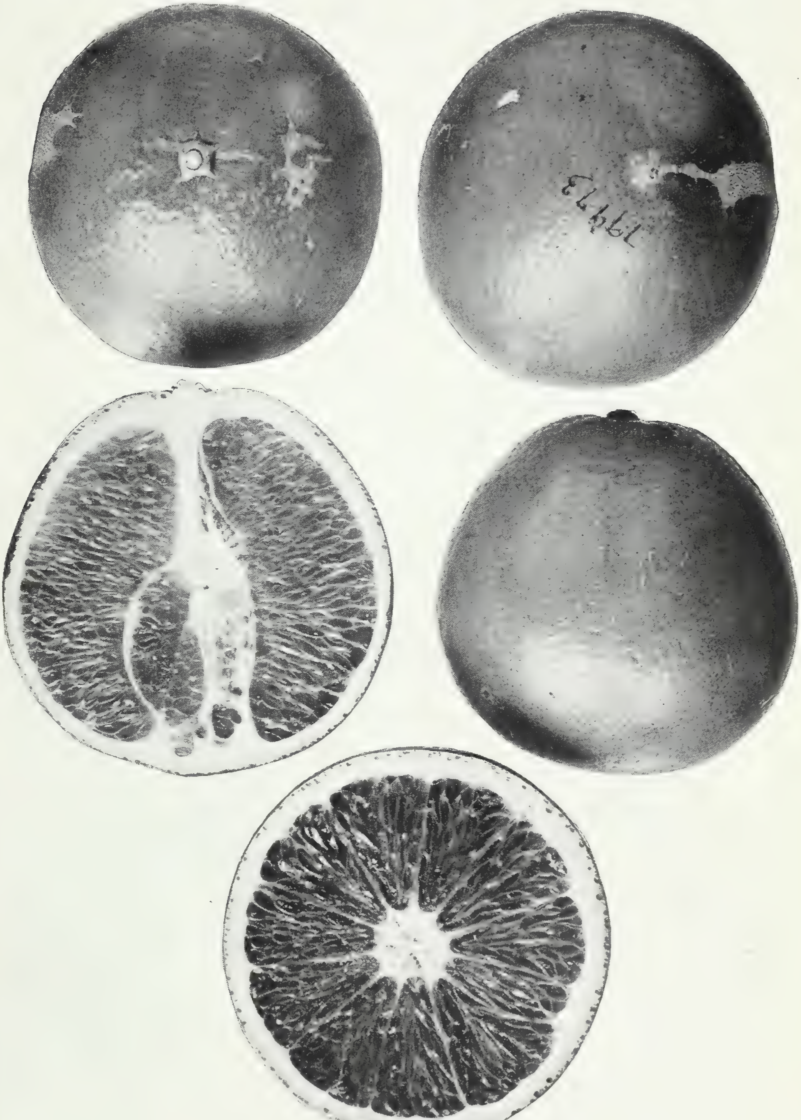
ONE OF THE TWO WASHINGTON NAVEL ORANGE TREES AT RIVERSIDE, CAL., GROWN FROM BUDS FROM TREES IMPORTED FROM BAHIA, BRAZIL, IN 1870.

From this tree and its companion the navel-orange industry of California has been developed within the past 45 years. Photographed in March, 1916.



P104A–HP AND P105A–HP

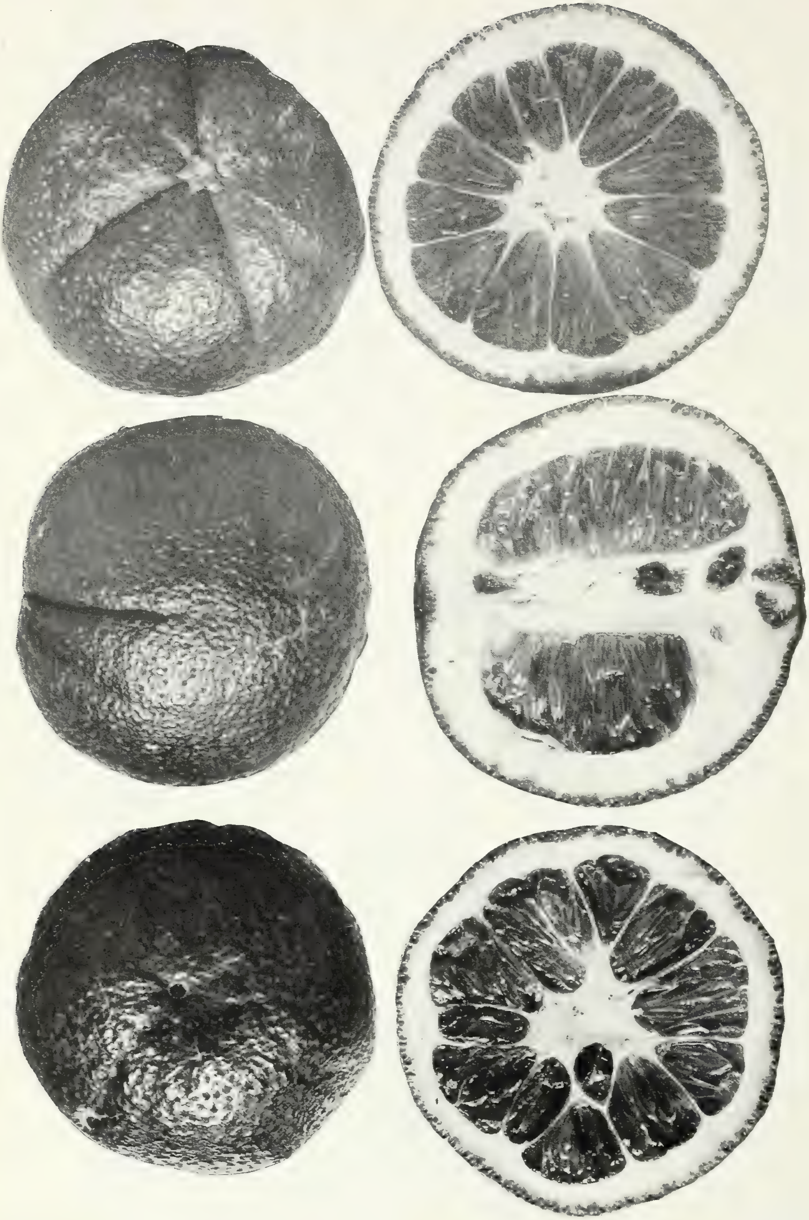
TYPICAL FRUITS OF THE WASHINGTON STRAIN OF THE WASHINGTON NAVEL ORANGE.



P1030A—HP

TYPICAL FRUITS OF THE THOMSON STRAIN OF THE WASHINGTON NAVEL ORANGE.

PLATE IV.



P1069A—HP

TYPICAL WRINKLED FRUITS OF THE AUSTRALIAN STRAIN OF THE WASHINGTON NAVEL ORANGE.

available for consideration in the location of similar plats of other fruits.

The performance-record plats of the Washington Navel orange trees usually have included 100 or more trees. In some cases a smaller number, varying from 5 to 50 trees in a plat, has been used. All the plats on which detailed performance records have been obtained are situated in two adjoining orchards, and in their selection all known interfering environmental factors in individual-tree comparisons were avoided as far as possible. By the selection of these plats in uniform soil areas and in sections with the same elevation, like exposure, and comparable drainage conditions, it is believed that the results presented are less affected by fluctuations due to variations in soil fertility, moisture, or other environmental factors than would be the case were the records of all the trees in the orchards used for comparison. Records of a total of 743 Washington Navel orange trees are now being kept in this work.

METHODS OF KEEPING PERFORMANCE RECORDS.

In describing the methods developed in the course of these investigations for recording the behavior of individual trees in the performance-record plats, the methods of procedure are discussed in the order in which they are carried out. This arrangement will be of interest in planning similar work in other locations or with other fruits, in order that the performance-record work may be done in the most natural and logical manner.

TREE NUMBERS.

The individual trees in the performance-record plats were given numbers, so that the data secured from the study of each tree and its fruit could readily be kept separate during the entire period of observation. In the beginning, the trees were given consecutive numbers. These numbers were stamped in metal tags which were attached by wires to the limbs of the trees. This method of numbering soon became cumbersome and impracticable.

As a result of a careful study of this matter, a method of tree numbering was evolved which has proved to be satisfactory and has been adopted extensively in individual-tree performance-record and related work. By this method each tree is given a number consisting of three parts: (1) The number of the block or division of the orchard; (2) the number of the row in the block; and (3) the position of the tree in the row, always counting from some fixed point, as, for instance, the irrigation head. A tree located in block 5, row 6, and the seventh tree in the row has the number 5–6–7. Where several different orchards are under observation, the tree number in the performance-record notes is preceded by the number or name of the orchard or its abbreviation. This system can be adapted to the conditions in any orchard and to any method of orchard management. For instance, in one of the orchards where investigational performance-record plats are located it was found desirable by the owner to subdivide certain plats rather than to give each such subdivision a separate plat number. This explains the use of the numbers 7: 1, 7: 2, etc., as plat designations in tree numbers in some of the following tables.

In the case of bearing trees, this number can be painted on the tree trunk or on one of the main limbs, arranging the number in a vertical column in the form shown in figure 1. A common lettering brush and pure white-lead paint are best adapted for this purpose. Very young trees on which space is not available for painting the number may be numbered by stamping or painting the number on a metal or other tag and attaching it to the tree.

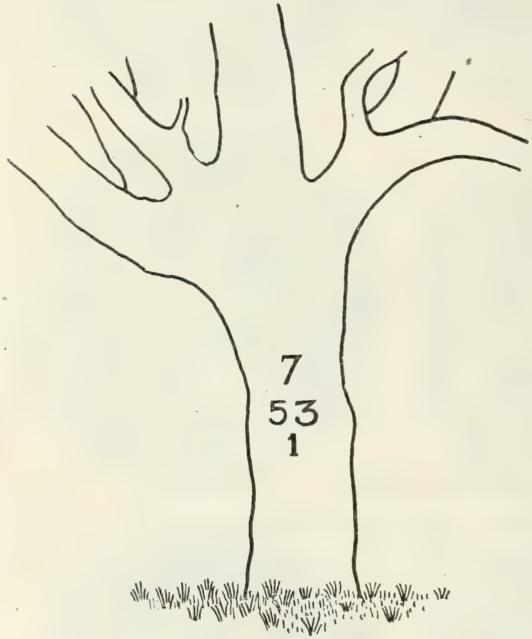


FIG. 1.—Arrangement of the individual tree number on the trunk of a tree.

The tree numbers are always placed in the same relative position on all of the trees in the orchard, for convenience in finding them. Large, distinct figures are made, so that they are easily legible.

TREE MARKERS.

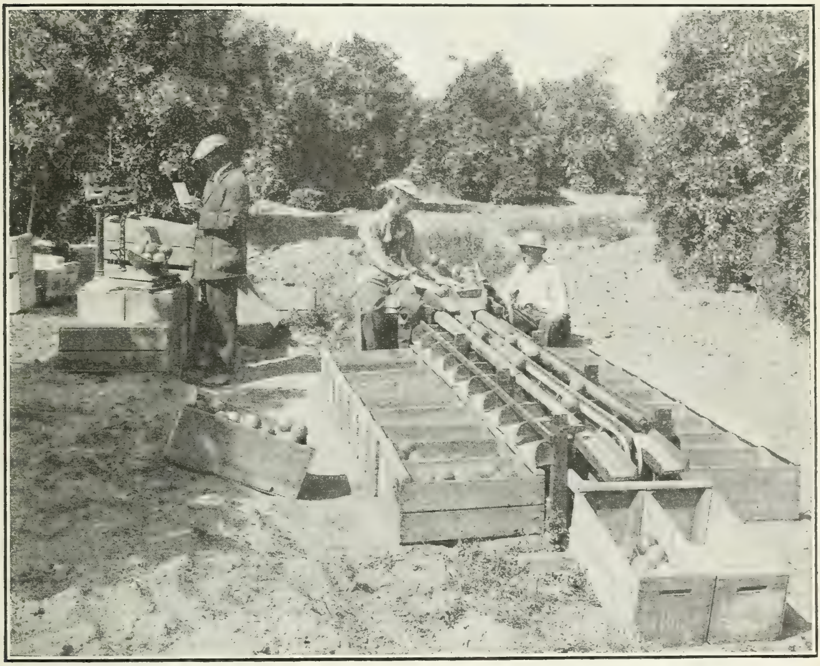
Each individual tree in the performance-record plats is marked several weeks before picking with streamers of white cotton cloth (see figs. 3, 4, and 6), in order that the regular orchard crew will understand that they are not to be picked. Several streamers, about 1 inch wide and 3 feet long, are tied to projecting limbs on all sides of the trees as high as can be reached conveniently. These markers are renewed every season.

PICKING.

The picking of the performance-record trees is done by trained men, and, so far as possible, the same men are used year after year in order to avoid possible errors which might be made by inexperienced pickers. Each tree is picked separately and its crop assembled at its base until needed for examination (see fig. 4).

ASSORTING.

All of the oranges picked during the day usually are examined that day, so as to avoid all possible injury to or changes in the fruit due to exposure. The fruits from each tree are assorted into three grades: An Orchard (or first) grade including all merchantable oranges which show no marked blemishes or other conditions detracting from their commercial value; a Standard (or second) grade, including blemished and misshapen fruits and those of inferior appearance but of sufficient value for shipment; and Culls, or such fruits as are wholly unfit for the market. In addition to these grades a record is kept of all of the strikingly variable fruits, particularly those resembling the various strains of the Washington Navel orange and others showing marked characteristics apparently due to bud variability.



P584A—HP

FIG. 2.—Apparatus used in obtaining investigational performance-record data from individual orange trees.

The orchard and standard grades are assorted into the 10 sizes most commonly used commercially. This work is done mechanically by means of a small specially constructed rope and roller sizing machine, as shown in figure 2. It is similar in operation to the regular packing-house machines used for this purpose, but adapted for orchard use.

The culls are not assorted in any way, but an explanation of the presence of any unusual number of them is noted. All of the fruits, including the drops on the ground under the trees, are secured by the pickers, those showing decay being kept in a separate box in order to avoid the spread of diseases to the sound fruits.

WEIGHING.

The fruits of each size in both the orchard and standard grades are weighed on ordinary small platform scales adapted for this purpose (fig. 2). Great care is used to secure accurate weights, inasmuch as under orchard conditions unusual precautions must be taken to avoid errors through the variable weights of fruit containers, frequent changes in the location of the scales, and other causes. The culls are weighed and counted collectively.

COUNTING.

After weighing, the fruits of each size in the orchard and standard grades are counted carefully and the numbers recorded in the proper places in the field performance-record forms. During the counting the fruits of variable strains and others of special interest are set aside for later classification and study.

RECORDING DATA.

The forms used in the orchard for recording the individual-tree performance-record data are shown in Table I. These forms are printed on both sides of sheets 6½ by 4 inches in size, which are bound 50 in a book, a size convenient for field use. As soon as possible these records are transferred to annual sheets (see first part of Tables VII to IX), on which the data are summarized to show the total crop of each tree for the year. These summaries are in turn transferred to period forms (see Tables VIII and XII), on which the records for six years can be assembled for comparison and study. These two last-mentioned forms are printed on sheets 8 by 10½ inches in size, arranged for binding in loose-leaf covers.

The value of all performance-record data depends upon the accuracy with which it is secured and recorded. Too much emphasis can not be placed on the necessity for the adoption of all possible safeguards to insure the reliability of the data. A regular method of procedure in weighing and counting the fruits and recording the data has been adopted and adhered to in all the investigational work. Freedom from interruption is of primary importance, because any distraction from this work is likely to cause errors. It is also desirable that as far as possible the same person should secure the records on all the trees in any given plat for the entire season, and preferably for the entire period of the investigations. As soon as the fruit is examined and the necessary records secured it is hauled to the packing house, except such samples as may be needed for further study. In view of the fact that during the performance-record work each orange must be handled several times, the greatest possible care is used in picking and handling in order to avoid as far as possible all mechanical injuries.

Methods for securing commercial individual-tree performance records as a part of the regular fruit-picking operation are described and illustrated in United States Department of Agriculture Farmers' Bulletin No. 794, entitled "Citrus-Fruit Improvement: How to Secure and Use Tree-Performance Records."

TABLE I.—*Forms used in investigational work for individual Washington Navel orange-tree performance records, showing the data from tree No. 3–14–27, Vivienda ranch, for the year 1914.*

[Horticultural and Pomological Investigations, B. P. I. form 264-1. The weights are expressed in pounds and ounces.]

A.—Front of sheet, showing the form for recording the number and weight of the fruit of the different sizes.

Grove, *Vivienda.* Plat *3.* Row *14.* Tree *27.*
Variety, *Washington Navel.* Strain, *Washington.*

Orchard grade.			Standard grade.		
Size.	Weight.	Number.	Size.	Weight.	Number.
288	*1–10*	*8*	288	*1– 1*	*6*
250	*5– 6*	*19*	250	*0–15*	*3*
216	*19–14*	*59*	216	*2–10*	*7*
200	*51–15*	*133*	200	*2–12*	*7*
176	*126–10*	*277*	176	*6–12*	*16*
150	*125–12*	*238*	150	*4– 9*	*9*
126	*99– 6*	*167*	126	*4– 8*	*8*
112	*21–14*	*33*	112	*1– 4*	*2*
96	*8– 4*	*11*	96	*0– 0*	*0*
80	*0–13*	*1*	80	*0– 0*	*0*

Date, *February 24, 1914.* Number of boxes, *11½.* Culls, *38;* weight, *17-4.*

B.—Back of sheet, showing the form for recording the variable fruits found on the tree.

Sports.	
Australian	*1*
Wrinkled	
Flattened	
Corrugated	
Protruding	*3*
Yellow	
Ridged	*3*
Ribbed	
Creased	
Raised section	
Sunken section	
Raised and sunken	
Yellow section	
Golden nugget	
Abnormal shape	*1*
Split navel	*7*
Split side	*3*
Pear shape	
Elliptical	
Long	
Very smooth	
Coarse	
Striped	
Off bloom	

NOTE.—*Fine quality fruit.*

DESCRIPTIVE NOTES.

In addition to the performance-record notes, detailed descriptions are made of representative trees and fruits of the different strains and variations in the orchard. Specially prepared forms are used in securing these data, so that all the records obtained will be comparable and arranged in the same sequence for the purpose of intelligent study. These systematic notes are particularly valuable in interpreting the behavior of the individual trees and in obtaining information concerning the correlations of production and the physical characteristics of the individual trees and fruits.

DESCRIPTIONS OF SOME OF THE IMPORTANT STRAINS.

WASHINGTON STRAIN.

The trees of the Washington strain, illustrated in figures 3 and 4 before and after the crop was picked, are productive and tend to bear regular and successive crops of fruit. They have an open and somewhat drooping habit of growth and dense foliage with large dark-green leaves. The trees of this strain produce but few suckers, i. e., branches showing abnormally vigorous vegetative growth in contrast with the large amount of such growth produced by trees of some other strains of the Washington Navel orange. Fruit variations are less commonly found in the trees of this strain than in the

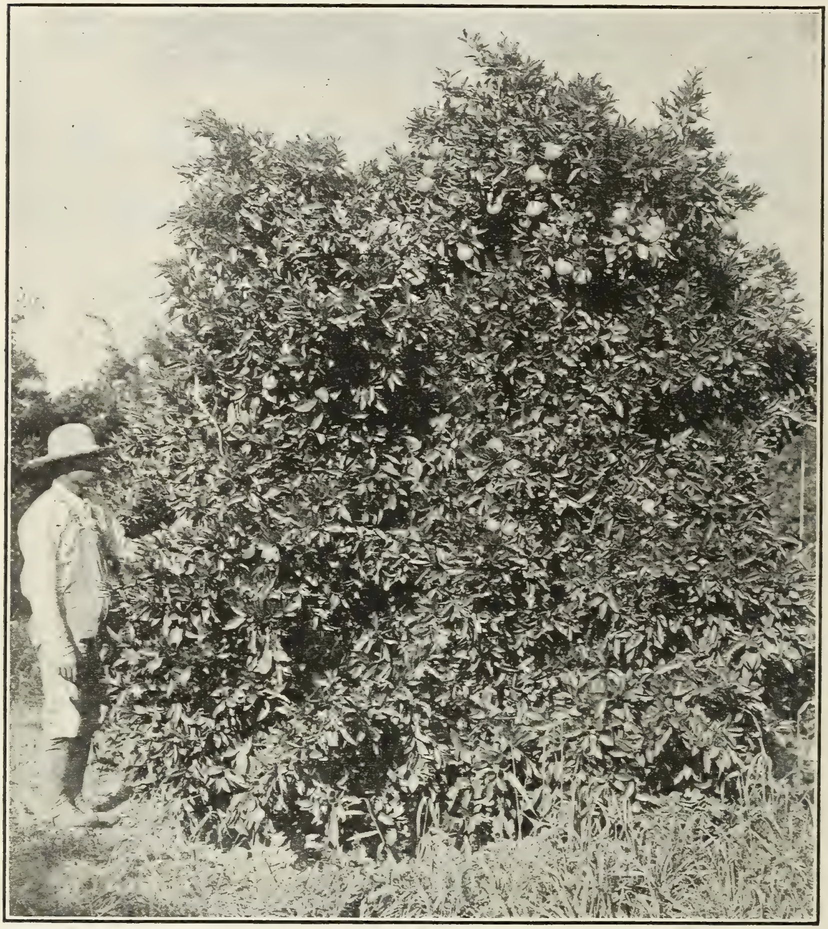

P731A—HP

FIG. 3.—A typical Washington strain orange tree of the Washington Navel variety located in one of the investigational performance-record plats. Note the white cloth streamers used to mark the tree. This tree after the crop was picked is shown in figure 4. The performance record of this tree for four seasons is given in rank 82 in Table IV.

trees of the other strains of this variety (see fig. 14). So far as observed no flowers of this strain have been found in which the anthers develop pollen.

The fruits, illustrations of which are shown in Plate II, are obovoid and of medium to large size. The rind is of medium thickness and the texture is smooth and grained. The color of the fruit is bright orange; the rag is tender and of comparatively small amount; the juice is abundant and of superior quality, having a pleasing and sprightly subacid flavor. The fruits are seedless and the navel

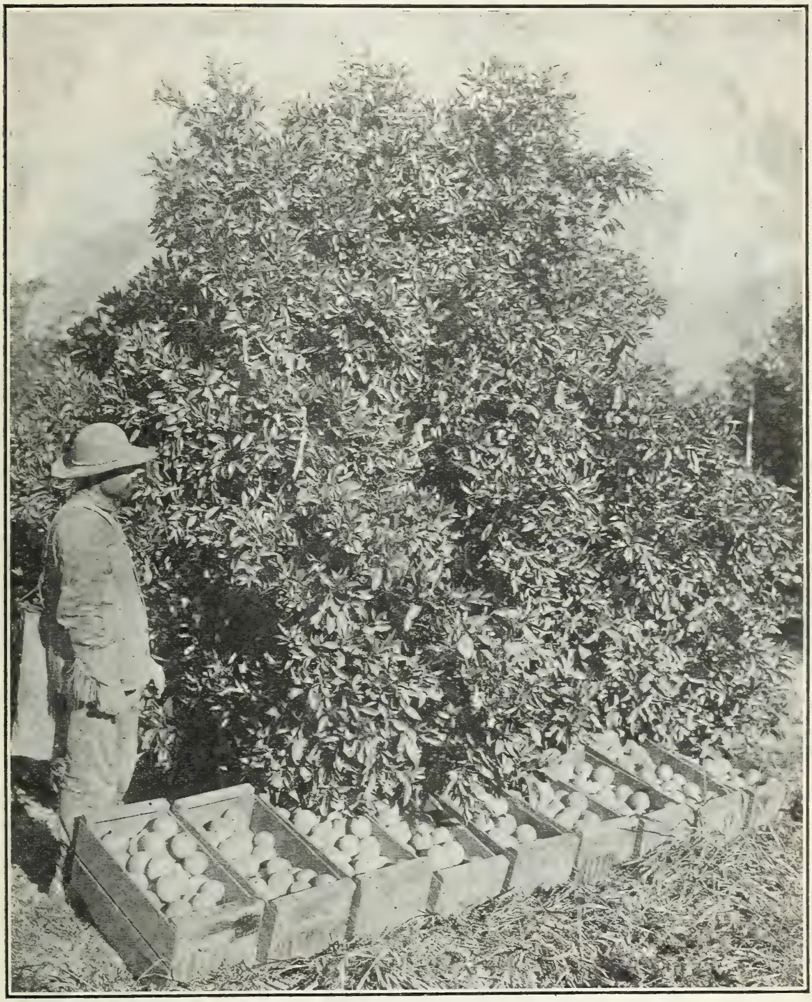


FIG. 4.—A typical Washington strain orange tree of the Washington Naval variety in the investigational performance-record plat with its crop picked and assembled and ready for inspection. This tree is shown before picking in figure 3. The performance record of this tree for four seasons is shown in rank 82 in Table IV.

usually is small, frequently rudimentary, with no development except in the rind.

The Washington is the most valuable of all the Washington Navel orange strains on account of the high productiveness of the trees and the superior commercial quality of the fruit. The commercial characteristics of the oranges of this strain are not equalled in value by those of any other navel orange grown in California at the present time.

THOMSON STRAIN.

The Thomson strain, frequently called the Washington Improved or the Thomson Improved, has been extensively propagated commercially and is generally recognized in California as an established variety.[1] Trees, individual fruits, and limbs bearing several fruits of this strain frequently are found in orchards of trees of the Washington strain, showing that it is a common bud variation. The trees show an unusual degree of variability in the character of their fruits, one tree frequently bearing several distinct strains. The established orchards of this strain show tree and fruit variations to such an extent that this condition is recognized as distinctly detrimental to its commercial value. Most of the Thomson trees in the investigational performance-record plats have produced one or more fruits

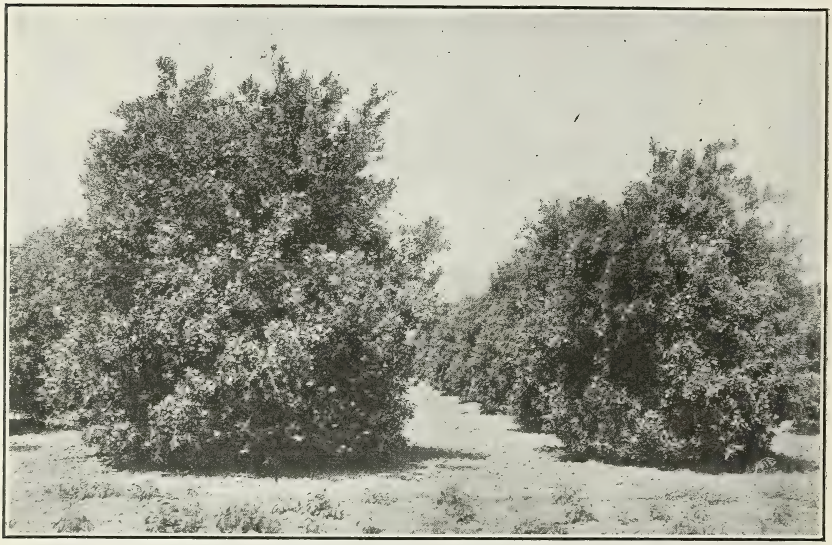
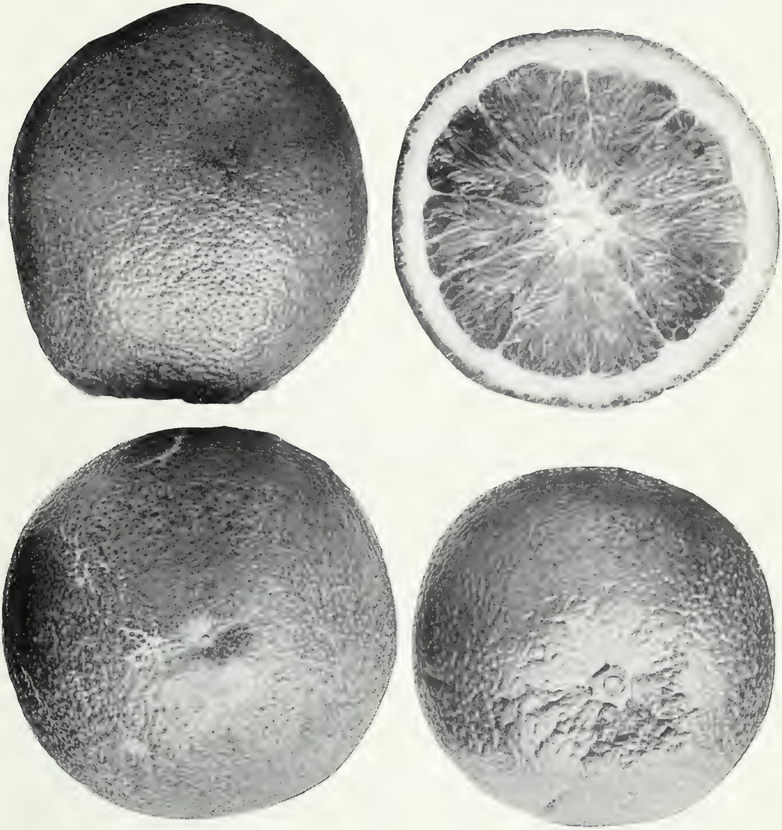


FIG. 5.—A typical tree of the Australian strain of the Washington Navel orange (at the left) in comparison with a typical tree of the Washington strain (at the right).

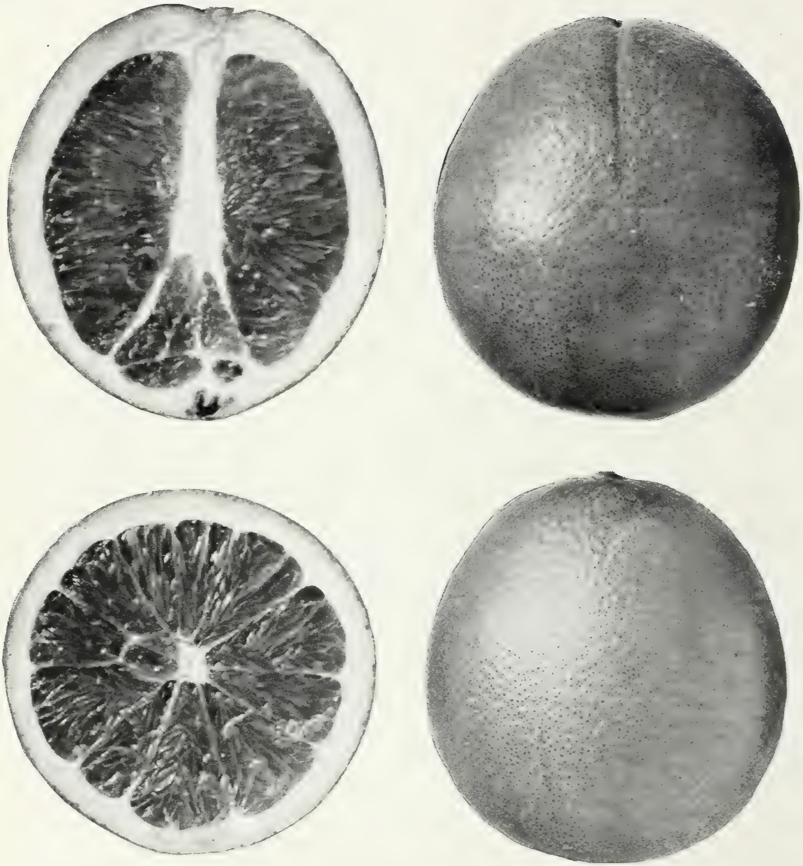
---

[1] In the Yearbook of the U. S. Department of Agriculture for 1911, pp. 436–438, the history and a complete description of this strain are presented by Dr. Wm. A. Taylor. At the time of the preparation of this paper it was thought by most growers that the Thomson orange was an established variety of independent origin from the Washington Navel orange. These investigations have shown that it is but a strain of the Washington Navel orange.



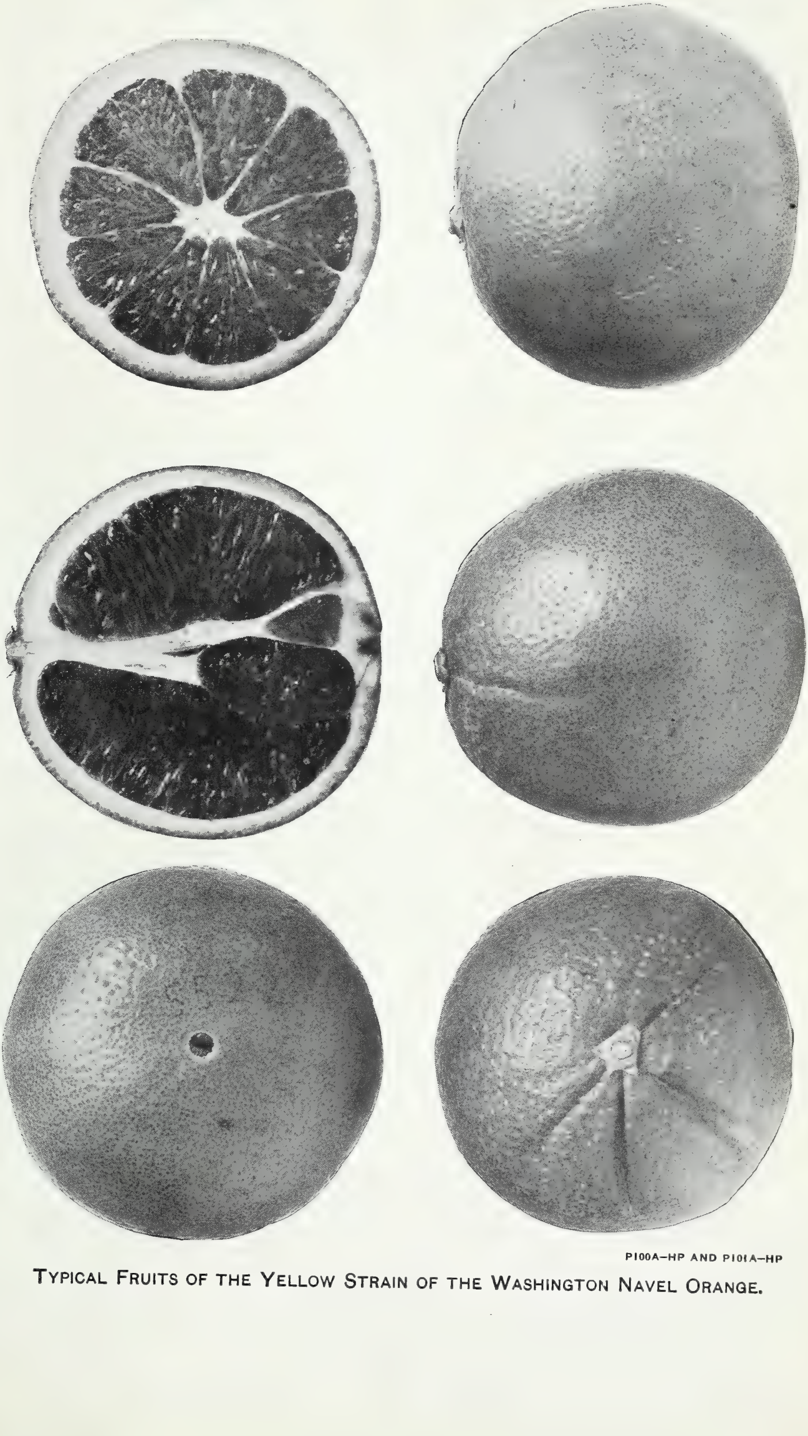
P516A—HP

TYPICAL COARSE FRUITS OF THE AUSTRALIAN STRAIN OF THE WASHINGTON NAVEL ORANGE.



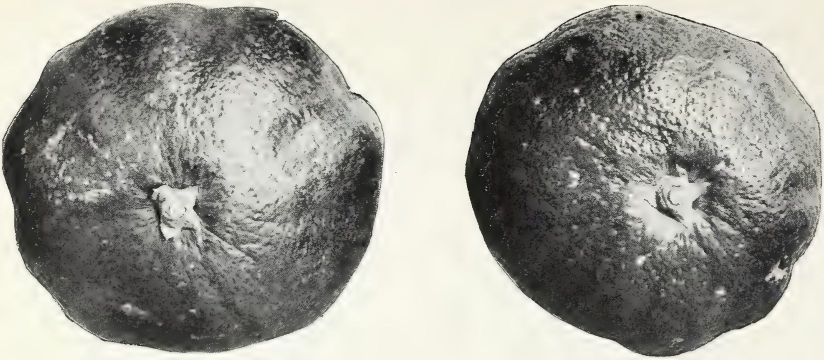
P116A—HP

TYPICAL FRUITS OF THE GOLDEN NUGGET STRAIN OF THE WASHINGTON NAVEL ORANGE.



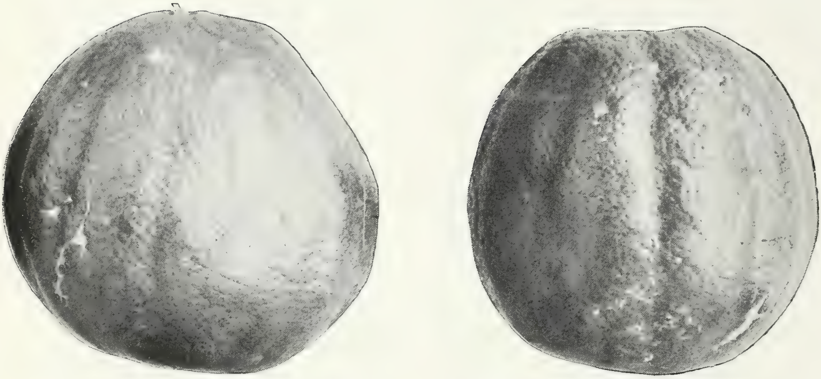
P100A–HP AND P101A–HP

TYPICAL FRUITS OF THE YELLOW STRAIN OF THE WASHINGTON NAVEL ORANGE.



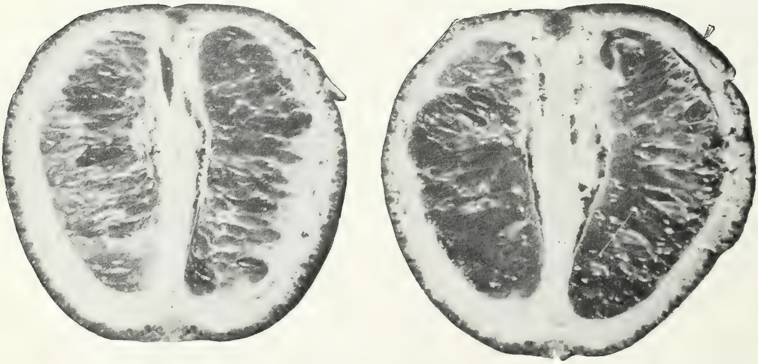
P1058A-HP

FIG. 1.—STEM ENDS.



P1060A-HP

FIG. 2.—SIDES OF THE SAME FRUITS.



P1059A-HP

FIG. 3.—AXIAL SECTIONS OF THE SAME FRUITS.

TYPICAL FRUITS OF THE RIBBED STRAIN OF THE WASHINGTON NAVEL ORANGE.

of the Washington strain every season during the period of observation. From the standpoint of the study of the behavior of citrus-fruit variations, this strain is one of the most interesting of those under consideration.

The trees of the Thomson strain are heavy and regular bearers, have an open and drooping habit of growth, dense foliage, and large dark-green leaves. As a rule, the trees of this strain are not as vigorous growers as those of the Washington strain under similar conditions.

The fruits, illustrations of which are shown in Plate III, are similar in shape and size to those of the Washington strain. They differ from them mainly in having a very smooth rind of a bright reddish orange color. The rind of the Thomson fruits is thinner and the rag is more abundant and coarser than that of the fruits of the Washington strain. The smooth texture, bright reddish color, and handsome appearance of the fruits is of distinct value from the market standpoint. The juice usually is less acid than that of oranges of the Washington strain and is lacking somewhat in flavor. The undesirable characteristics of the rag and the inferior quality of the juice are detrimental to the reputation of the fruits of this strain. The fruits are seedless and the navels variable in size and arrangement, usually medium to small, occasionally rudimentary.

Among the interesting fruit variations observed in the Thomson trees are those having the Thomson rind characteristics and the Washington rag and juice qualities, a Thomson-Washington strain; and the reverse of this condition, a Washington-Thomson strain.

AUSTRALIAN STRAIN.

The name Australian seems to have been used frequently on account of the resemblance of the trees of this strain to those grown in California from certain Australian importations. It has gradually been adopted by citrus growers to indicate the rank-growing, unproductive Washington Navel trees which bear coarse, inferior fruits. As a matter of fact, the name is used frequently to include several distinctly inferior variations of the variety and it is here used in this collective sense.[1]

The trees, an illustration of which is shown in figure 5, are either regularly unproductive or produce crops at irregular intervals. The typical trees have a peculiar upright habit of growth and usually show more than ordinary vegetative vigor. Many trees of this strain produce a very large number of suckers, which until recently have been highly prized for bud wood for use in propagation. The foliage normally is sparse and the leaves are comparatively small, narrow, and sharply pointed. The trees usually can be picked out in established orchards by the fact that unless freshly pruned they stand several feet above neighboring trees of other strains. Efforts to induce fruitfulness in the trees of this strain by severe pruning or other similar tree treatments have been unsuccessful, the effect of pruning being to induce increased vegetative growth.

---

[1] In Bulletin 1, Division of Pomology, U. S. Department of Agriculture, on p. 67, under the head of "Navel (Australian)," the following statement concerning the origin of this strain occurs: "Originally from Bahia, Brazil, by way of Australia and California. Tree shy bearer."

The fruits from trees of the Australian strain fall into three groups: Those resembling Washington fruits except as to size and quality; those having a flattened shape with a peculiar wrinkled or ribbed appearance about the stem end, as shown in Plate IV; and those of large size and globular shape, with a very coarse, rough texture of rind, which is frequently correlated with an unusually thick rind and inferior quality of juice, as shown by its low sugar content. Illustrations of this last group are shown in Plate V. The Australian fruits are usually yellowish orange in color and are inferior in commercial value to those of the Washington and Thomson strains. The rag generally is abundant and coarse. The juice usually is small in quantity, of poor flavor and inferior quality. The fruits normally are seedless and have large navels, which, in some cases, form large protuberances. These detract from the appearance and market value of the fruits and are likely to be injured in handling. Under the operation of a sugar and acid ratio standard in commercial picking, the fruits of the Australian strain usually do not come up to the maturity standard during the regular picking season and therefore must be left on the trees or discarded, making their production almost or wholly a total loss to the growers.

Several trees of the Australian strain in the performance-record plats have been top-worked by using bud wood from Washington trees. The buds of the Washington strain in the Australian trees have made very satisfactory growth and have produced Washington strain foliage and fruits. As a rule, it has required from three to five years to bring the rebudded Australian trees up to the normal production of neighboring Washington trees.

GOLDEN NUGGET STRAIN.

The Golden Nugget strain,[1] like the Thomson, has been propagated commercially in California and is accepted as a distinct variety by many nurserymen and growers, having been introduced by the San Dimas Nursery Co., of San Dimas, Cal.,[2] and by Mr. J. P. Engelhart, of Glendora, Cal.[3] Its commercial cultivation is limited, being confined for the most part to a few small experimental plantings. In most navel-orange groves trees of this strain are of frequent occurrence. Some trees of the Washington, many of the Thomson, and a few of the other strains in the investigational performance-record plats have been found to bear individual fruits of this strain. Occasional limbs have been found in such trees producing typical Golden Nugget fruits consistently from year to year during the entire period of observation.

---

[1] Sometimes called the Golden Buckeye.

[2] Nursery catalogue of the San Dimas Nursery Co., 1903–4. In this publication the Golden Buckeye and Golden Nugget navel oranges are listed separately.

[3] Personal interview with Mr. Engelhart, May 17, 1910.

This strain, as in the case of the Australian, is really made up of several groups, differing in some minor respects but having certain general points of common resemblance. In the further study of this strain the characteristics of trees and fruits of these groups are being given careful consideration. In this discussion, however, the various groups constituting the strain will be treated collectively as belonging to the same strain, because at the present time the fruits of all are considered as belonging to one class from the commercial standpoint.

The trees of the Golden Nugget strain are, as a rule, less vigorous growers than Washington trees, the habit of growth is drooping, and the foliage dense. The leaves frequently are of lighter color than comparable ones of the Washington strain, and in many cases the trees are easily distinguished in the orchard by reason of the light-colored foliage and the characteristic dwarf and drooping habit of growth. In some instances the habit of growth, foliage, and other tree characteristics are almost indistinguishable from those of the Washington or Thomson strains. The fruits borne by such trees differ in some respects from those produced by the dwarf-growing Golden Nugget trees, but not enough to warrant a separate classification and description at this time.

The Golden Nugget fruits, illustrations of which are shown in Plate VI, usually are somewhat pyriform in shape and of medium to large sizes. The rind is thin and of smooth texture. The color of the fruit is light yellowish orange, the rag is coarse and abundant, and the juice is fairly abundant and frequently of distinctive quality. The fruit is seedless and has very small and usually only rudimentary navels in which the opening is nearly or entirely closed. The fruits have a peculiar and unmistakable appearance, due in part to the presence of comparatively few oil cells, the light yellowish color of the rind, and the pyriform shape of the oranges. In some cases the fruits bear narrow red stripes or characteristic red ridges or knoblike projections.

As a whole, this strain is not a valuable one for commercial planting, and the presence of such trees in established navel-orange orchards is detrimental to the commercial value of the crops produced by these orchards. At the same time the striking characteristics of the fruits of this strain and their frequent and easily recognized occurrence in trees of other strains make it important from the standpoint of the study of the origin and behavior of Washington Navel orange strains arising from bud variations.

YELLOW WASHINGTON STRAIN.

The trees of the Yellow Washington strain usually are less productive than true Washington Navel trees. The habit of growth is somewhat erect and the foliage rather sparse. The leaves are likely to be small, slightly pointed, and light green in color.

The fruits, illustrations of which are shown in Plate VII, are similar in shape, size, and thickness and texture of rind to those of the Washington strain, but the color is markedly different, being a light yellow, which in some cases becomes orange yellow late in the season. The characteristics of the rag and juice are somewhat similar to those of the Washington strain, except that as a rule the fruits ripen a little earlier and the flesh is markedly lighter in color. The fruits are seedless and the navel is usually small to medium in size. In many cases the fruits bear characteristic small red stripes, or blotches, similar in appearance to those found on many Golden Nugget fruits. It is believed by some growers that this strain may prove to be of commercial value under certain soil and climatic conditions, and a few small orchards of these trees have been planted. The fruits occur as infrequent bud variations in some Washington strain trees in the performance-record plats.

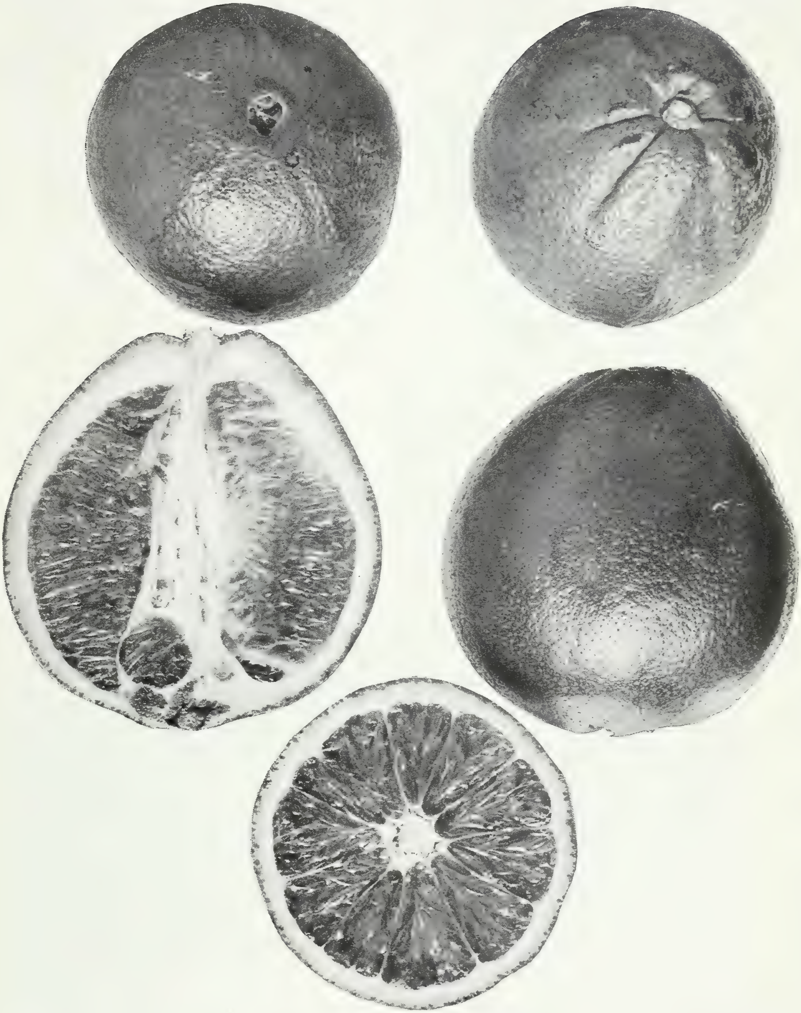
YELLOW THOMSON STRAIN.

The trees of the Yellow Thomson strain under observation are similar in production, habit of growth, and foliage characteristics to the Thomson trees.

The fruits resemble typical Thomson fruits with the exception of their color and some characteristics of minor importance. The color of the fruits of this strain is yellow to yellowish orange, and they frequently show small red markings. As a rule, the fruits seem to ripen somewhat earlier than those of the Thomson strain under comparable conditions. This strain holds about the same relation to the Thomson that the Yellow Washington holds to the true Washington strain. It is of little commercial value and is of interest mainly from the standpoint of the study of the variability existing in the Washington Navel variety. Individual fruit variations of this strain occur frequently in Thomson trees, and occasionally Yellow Thomson limb sports have been found.

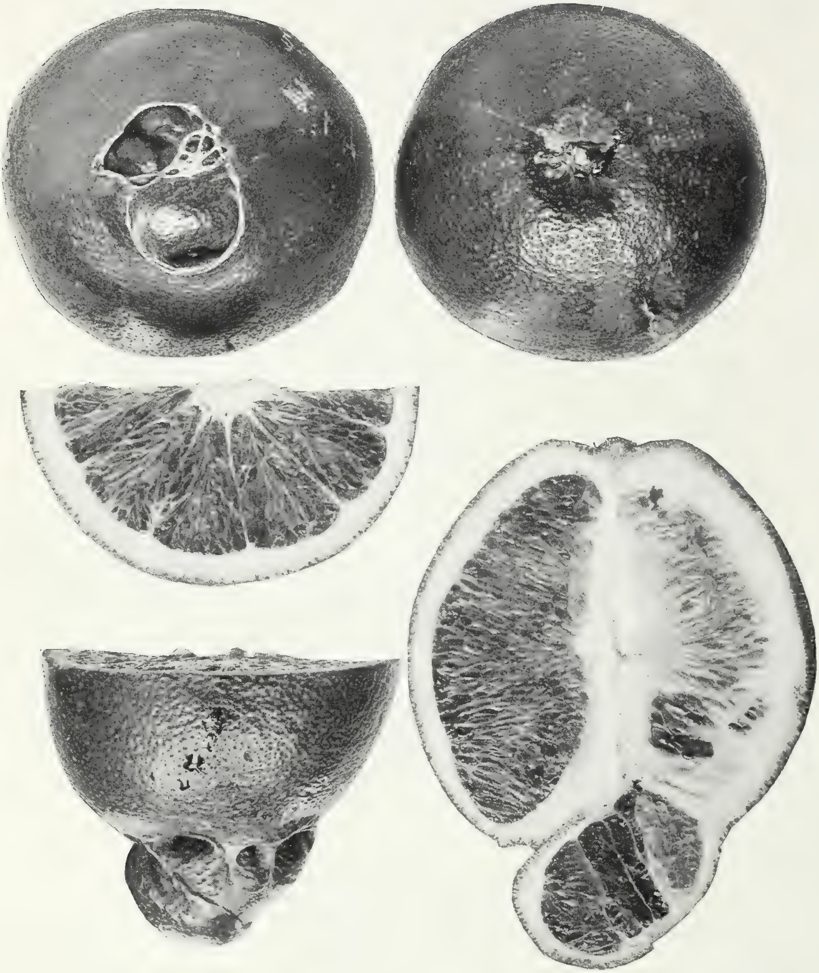
RIBBED STRAIN.

The habit of growth of the trees of the Ribbed strain resembles that of the Washington trees except that usually they are more finely branched. As a rule, they are not as productive as Washing-

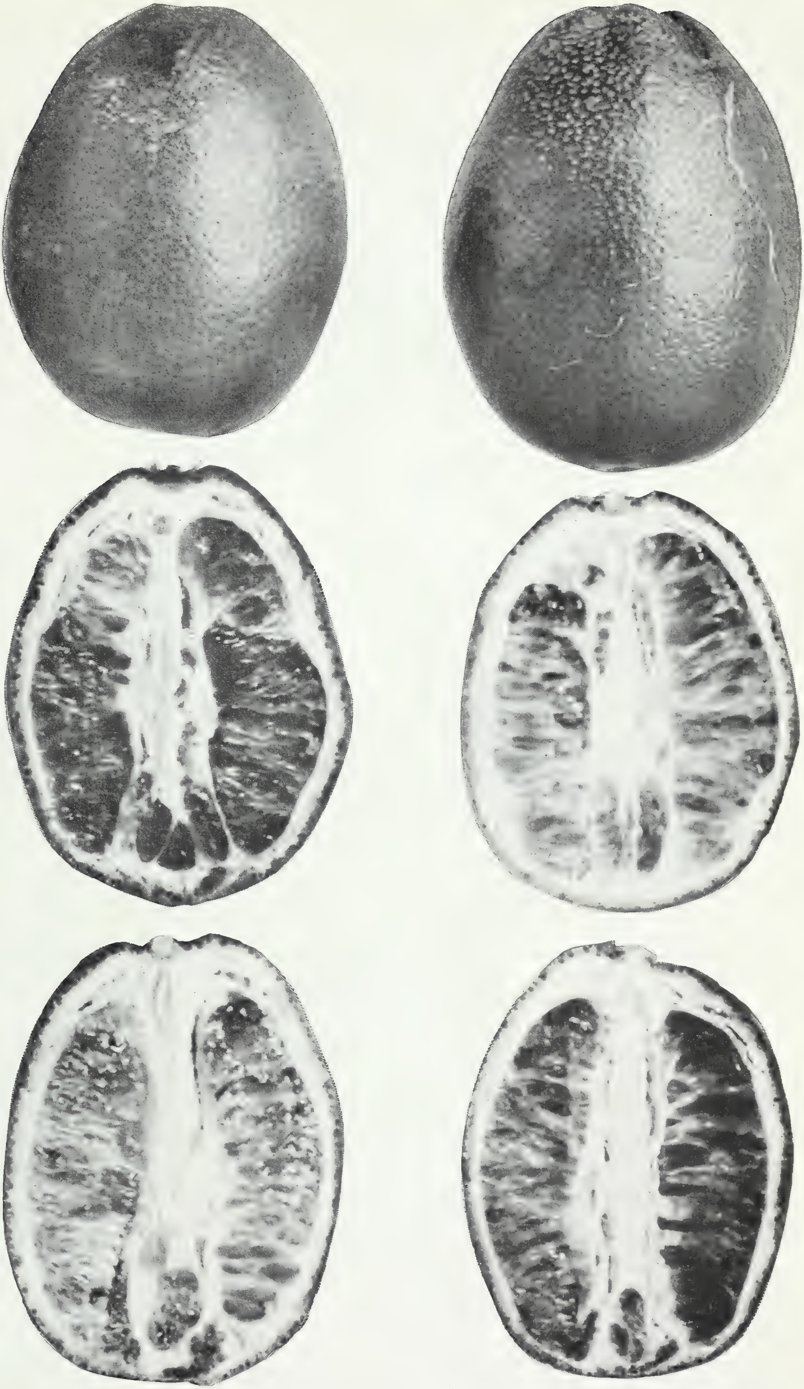


P1072A—HP

TYPICAL FRUITS OF THE PEAR-SHAPE STRAIN OF THE WASHINGTON NAVEL ORANGE.

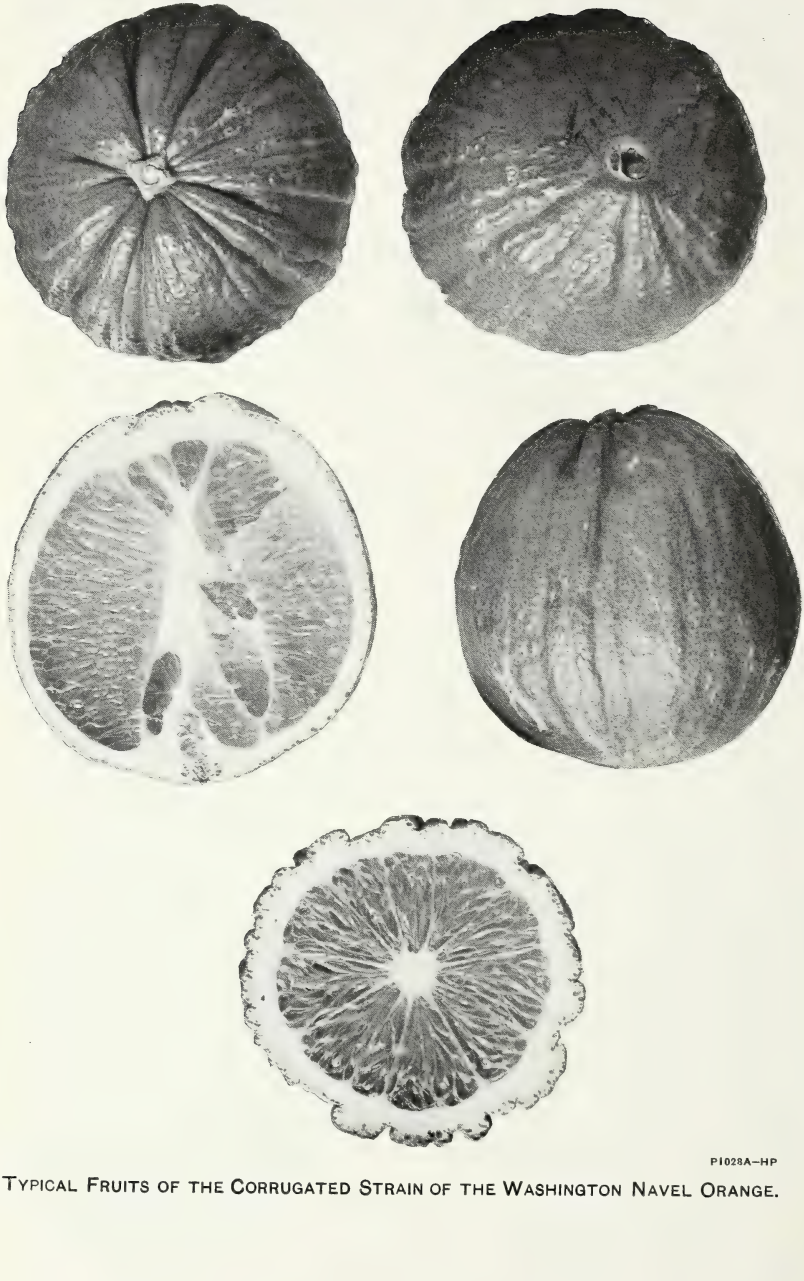


TYPICAL FRUITS OF THE PROTRUDING NAVEL STRAIN OF THE WASHINGTON NAVEL ORANGE.



P9343HP AND P9344HP

TYPICAL FRUITS OF THE LONG STRAIN OF THE WASHINGTON NAVEL ORANGE.



P1028A—HP

TYPICAL FRUITS OF THE CORRUGATED STRAIN OF THE WASHINGTON NAVEL ORANGE.

ton trees. The habit of growth is open and drooping and the foliage semidense, in some cases the leaves being rather small and sharply pointed.

The fruits, illustrations of which are shown in Plate VIII, figures 1, 2, and 3, usually are globular in shape and of small to medium size. The rind is thin and has a ribbed appearance, but is fairly smooth. The color usually is dull orange. The rag is tender and small in quantity, and the juice is abundant and of good flavor and quality. The fruit is seedless and the navel small and inconspicuous. The principal objections to this strain from the commercial standpoint are the small size of the fruits and their fluted appearance. The fruits of this strain have been found to occur as occasional individual fruit sports in trees of Washington and other strains, and infrequently as limb sports in Washington and Thomson trees.

PEAR-SHAPE STRAIN.

The trees of the Pear-Shape strain usually are low producers, are finely branched, and have an upright habit of growth and rather sparse foliage of small, sharply pointed leaves.

The fruits, illustrations of which are shown in Plate IX, are pyriform in shape, usually having a rather large collar or neck at the stem end, and are small to medium in size. The rind is rather coarse in texture and usually very thick and is yellowish orange in color. The rag is abundant and frequently coarse and the juice is small in quantity and inferior in quality. The fruits are seedless and the navels usually small. This strain is of inferior commercial value, but of interest from the standpoint of its occurrence as individual fruit and limb variations in trees of the Washington and other strains.

PROTRUDING-NAVEL STRAIN.

One of the interesting strains of the Washington Navel orange is that in which the fruits develop large, secondary oranges, or navels, and large navel openings. The navel formations may be entirely inclosed within the rind of the primary oranges, in which cases the fruits are usually elongated and abnormal in shape, or the secondary fruits may entirely protrude through the navel openings. Fruits with large interior navels are objectionable because they can not be eaten conveniently with a spoon. Fruits with protruding navels are subject to injuries in handling, which frequently lead to decay. The trees of this strain usually show more than ordinarily vigorous vegetative growth and have very large leaves.

The fruits, illustrations of which are shown in Plate X, frequently are irregular in shape and large in size. The coarse, thick rinds are deep orange in color. The rag is coarse and the juice abundant and of fair quality. The fruit is seedless, and the navels very large and objectionable. Because the character of the development of the navel inside the fruit can not always be determined by outside inspection, and for other reasons, these fruits often are overlooked by graders in the packing house and may be included in the regular pack. This strain is a frequent variation in Washington and Thomson trees.

LONG STRAIN.

The trees of the Long strain are similar in appearance to those of the Washington strain and have about the same characteristics of growth, foliage, and production.

The fruits, illustrations of which are shown in Plate XI, are mainly distinguished from those of the Washington strain by their peculiar long and cylindrical shape, which makes them poorly adapted for packing in the present commercial package. The fruits usually are of small to medium size and in color, texture, and other characteristics of the rind are similar to the Washington strain. The rag is small in quantity and tender, and the juice is abundant and of good quality. The fruits are seedless, and the navels usually are small to medium in size. Fruits of this strain are found frequently as individual fruit or limb sports in Washington and Thomson trees.

CORRUGATED STRAIN.

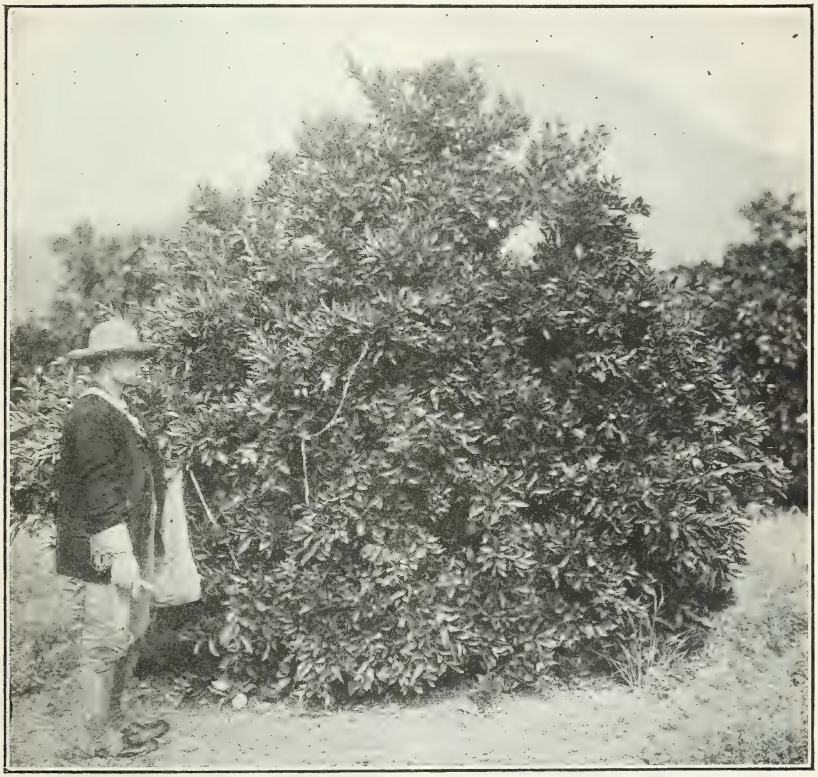
The trees of the Corrugated strain resemble the Thomson closely in production, habit of growth, and foliage characteristics.

The fruits are very different from those of the other Washington Navel orange strains, being prominently ridged or corrugated, as shown in Plate XII. They usually are globose in shape and of large size. The rind is of medium thickness and the color deep orange. The rag is tender and small in quantity, and the juice is abundant and of good quality. The fruits are seedless and the navels small to medium in size. Fruits of this strain occur as individual fruit or limb variations in trees of the Washington and Thomson strains. On account of the peculiar and prominent marking of the fruits, this strain is one of the most interesting and important of those resulting from the bud variations of the Washington Navel orange. Its rather frequent occurrence and the successful transmission of its characteristics in propagation experiments furnish strong arguments for care in bud selection in the propagation of the citrus varieties.

UNPRODUCTIVE STRAIN.

The trees of the Unproductive strain, an illustration of which is shown in figure 6, have a very low production, are finely branched, and have a spreading habit of growth with sparse foliage. The leaves usually are small, narrow, and sharply pointed. The trees frequently produce an excessive amount of bloom, nearly all of which drops early in the season, so that only a few fruits develop and reach maturity.

The fruits usually are globose in shape and are either very small or very large in size. The rinds are coarse and thick, of a yellowish orange color. The rag is abundant and coarse, and the juice is scant and of inferior quality. The fruits are seedless and have medium to large navels, many of which protrude. The fruits of the Unproductive strain are almost worthless commercially and where they occur detract seriously from the value of the general crop of the grove.



P752A—HP

Fig. 6.—A typical tree of the Unproductive strain of the Washington Navel orange. The performance record of this tree for four seasons is given in rank 475 in Tables IV and V, and its performance record for six seasons is shown in rank 150 in Tables II and III.

FLATTENED STRAIN.

The trees of the Flattened strain are similar in appearance, habit of growth, and foliage characteristics to those of the Washington strain.

The fruits, illustrations of which are shown in Plate XIII, are of medium size and are flattened at the stem and blossom ends. The rind is bright orange in color, thick, and of a coarse texture. The rag is of medium quantity and the juice fairly abundant and of fair quality. The fruits are seedless and have navels of ordinary size. The flattened shape of these fruits makes them poorly adapted for packing under prevailing conditions; otherwise, this strain is equally as good as the Washington strain in commercial quality. It occurs as single fruit and limb variations in Washington, Thomson, and other trees and as individual trees.

DRY STRAIN.

In addition to the 13 strains described above, one other, the Dry strain, might be added to this list. The trees show a finely branched arrangement, somewhat resembling that of the Unproductive strain. The habit of growth of the trees is erect and the foliage is dense, with small sharply pointed leaves.

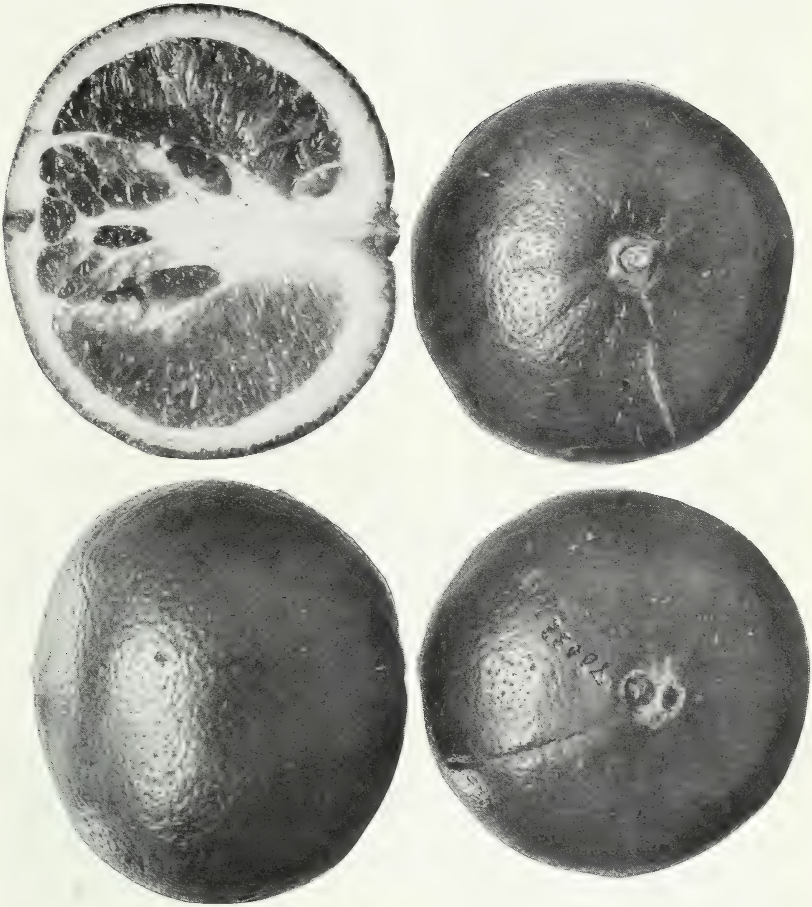
The fruits, illustrations of which are shown in Plate XIV, usually are globular or oblong and of small to medium size; the rinds are very thick and very coarse in texture and usually are yellowish orange in color. The rag is abundant and coarse, and the juice is very scant, often hardly enough to measure, and of very inferior quality. The fruits are seedless and the navels usually medium to large. This strain has been found to occur in some orchards as individual fruit and limb sports in trees of the Washington strain. In some few cases under observation a considerable proportion of the trees in the orchards are of this strain, making the crop as a whole of very inferior commercial value.

INDIVIDUAL FRUIT VARIATIONS.

The individual fruit variations found in the trees of the Washington or other strains are of fundamental importance in considering the origin of the various strains under prevailing conditions.

In the first performance-record work with Washington strain trees, it was found during the process of assorting the fruits that occasionally one or more fruits, very distinct and different from the Washington strain, such as those of the Golden Nugget, Australian, or Thomson strain, occurred in the crop. This condition led to a careful study of the occurrence of these fruit variations in trees of the Washington and other strains before picking. It was soon found that these individual fruit variations, such as a Golden Nugget in a Washington strain tree, corresponded in all particulars to the fruits borne by Golden Nugget trees in the orchards in which the performance-record plats were located.

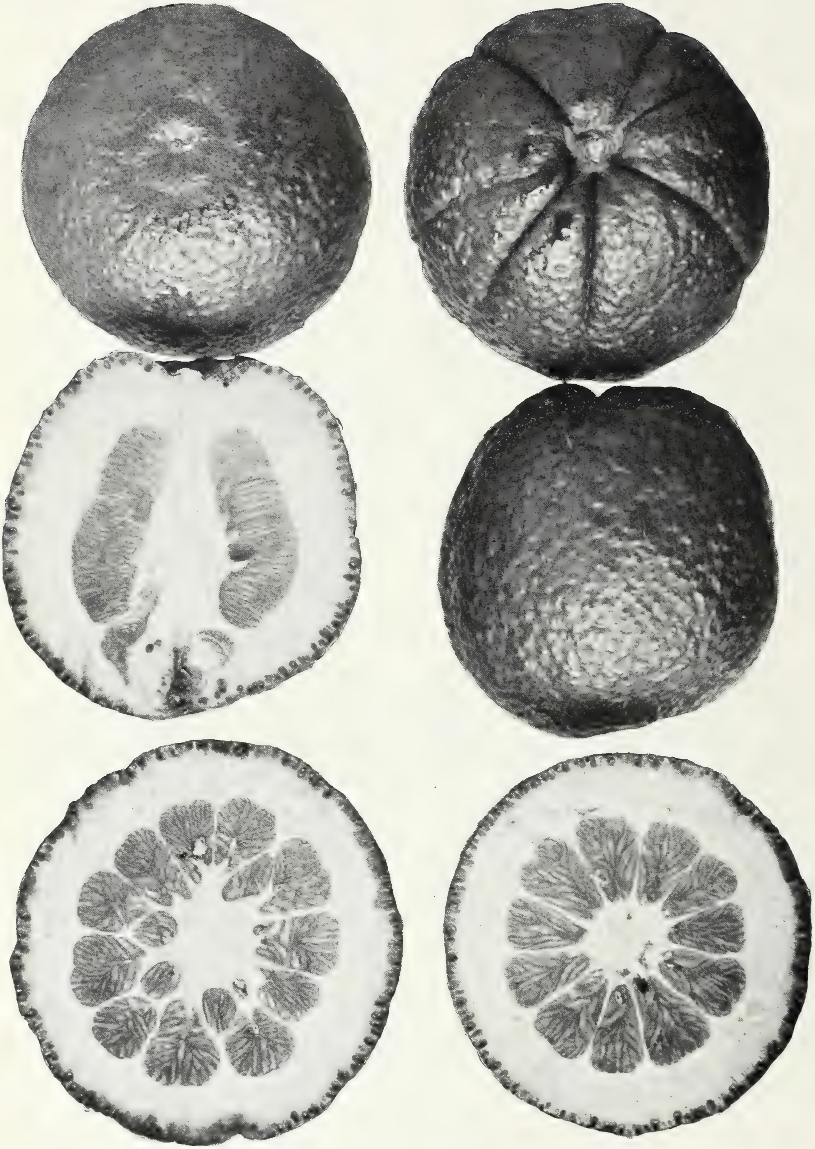
One of the first and most important individual fruit variations observed in Washington strain trees in 1910 in one of the performance-record plats was an Australian fruit. Shortly after the discovery of this single variation in the crop of a Washington performance-record tree, a limb in a near-by Washington tree was found to bear



P9319HP

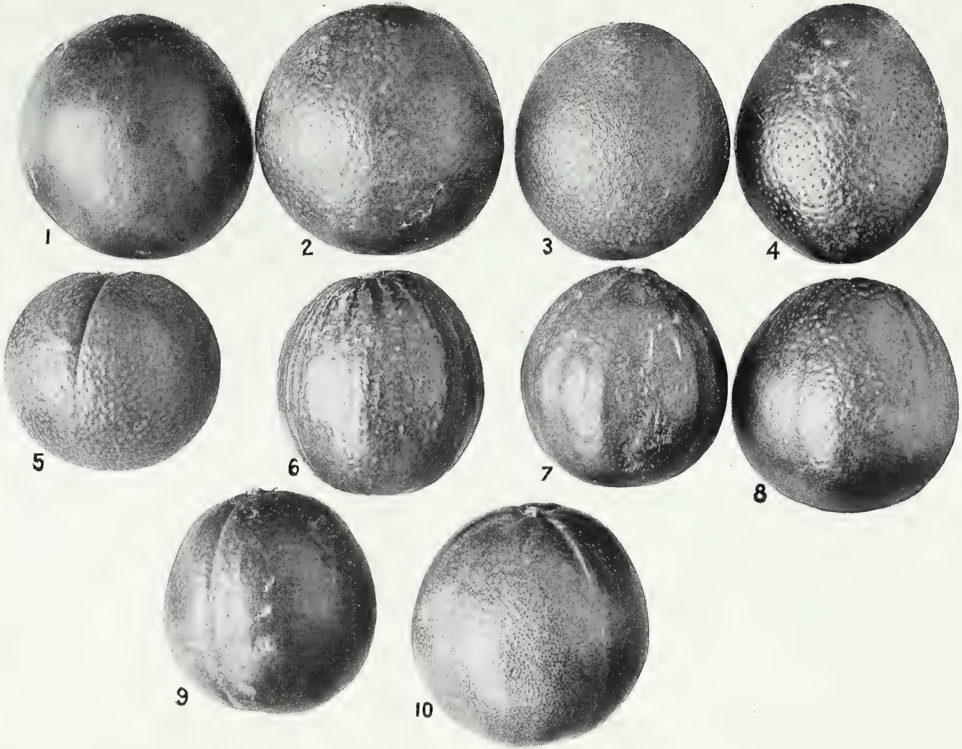
TYPICAL FRUITS OF THE FLATTENED STRAIN OF THE WASHINGTON NAVEL ORANGE.

PLATE XIV.



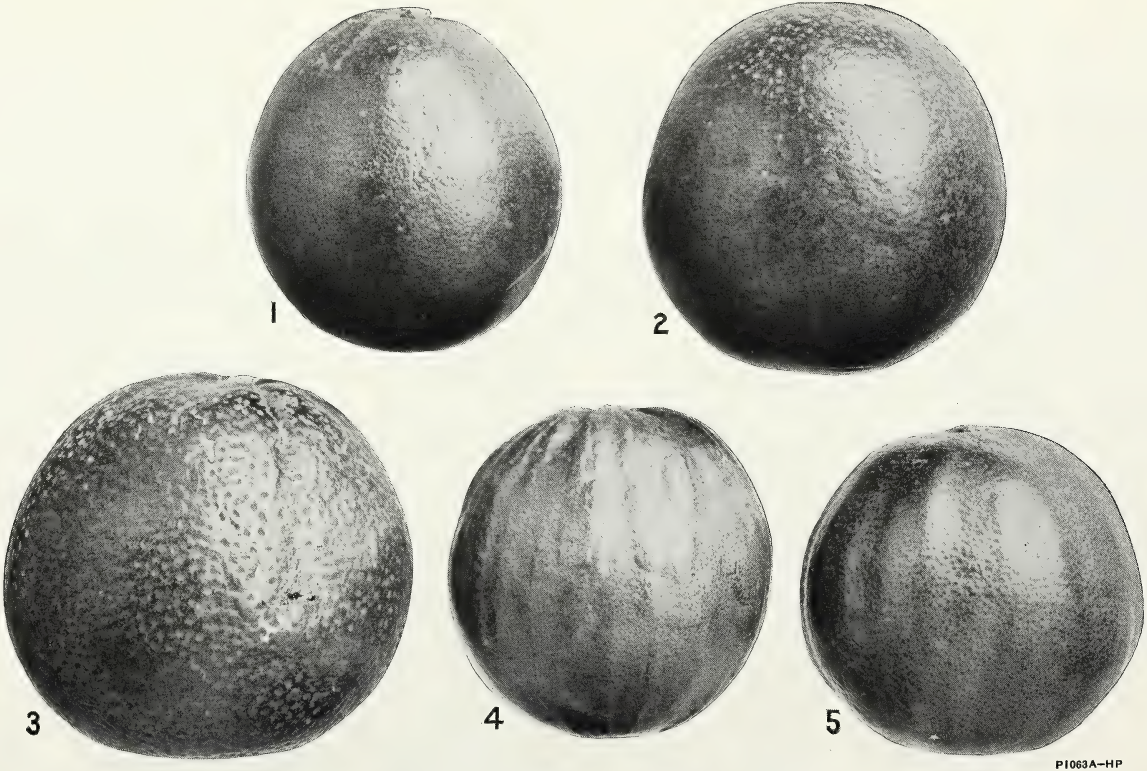
P9326HP

TYPICAL FRUITS OF THE DRY STRAIN OF THE WASHINGTON NAVEL ORANGE.



P1047A—HP

FRUITS OF DIVERSE STRAINS BORNE BY A WASHINGTON NAVEL ORANGE TREE GROWN FROM A SINGLE BUD: 1, THOMSON; 2, GOLDEN NUGGET; 3, WASHINGTON; 4, LONG; 5, FLATTENED; 6, CORRUGATED; 7, RIBBED; 8, RAISED SECTION; 9, CREASED, ONE-THIRD THOMSON AND TWO-THIRDS GOLDEN NUGGET; 10, THREE-FOURTHS THOMSON AND ONE-FOURTH YELLOW THOMSON.



P1063A–HP

TYPICAL SPECIMENS OF THE (1) YELLOW, (2) THOMSON, (3) WASHINGTON, (4) CORRUGATED, AND (5) RIBBED STRAINS OF THE WASHINGTON NAVEL ORANGE BORNE BY LIMB SPORTS IN A TREE GROWN FROM A SINGLE BUD.

a large number of these typical Australian fruits. A further study of this orchard revealed several trees bearing all or nearly all Australian fruits and having the peculiar upright habit of growth so characteristic of the trees of that strain.

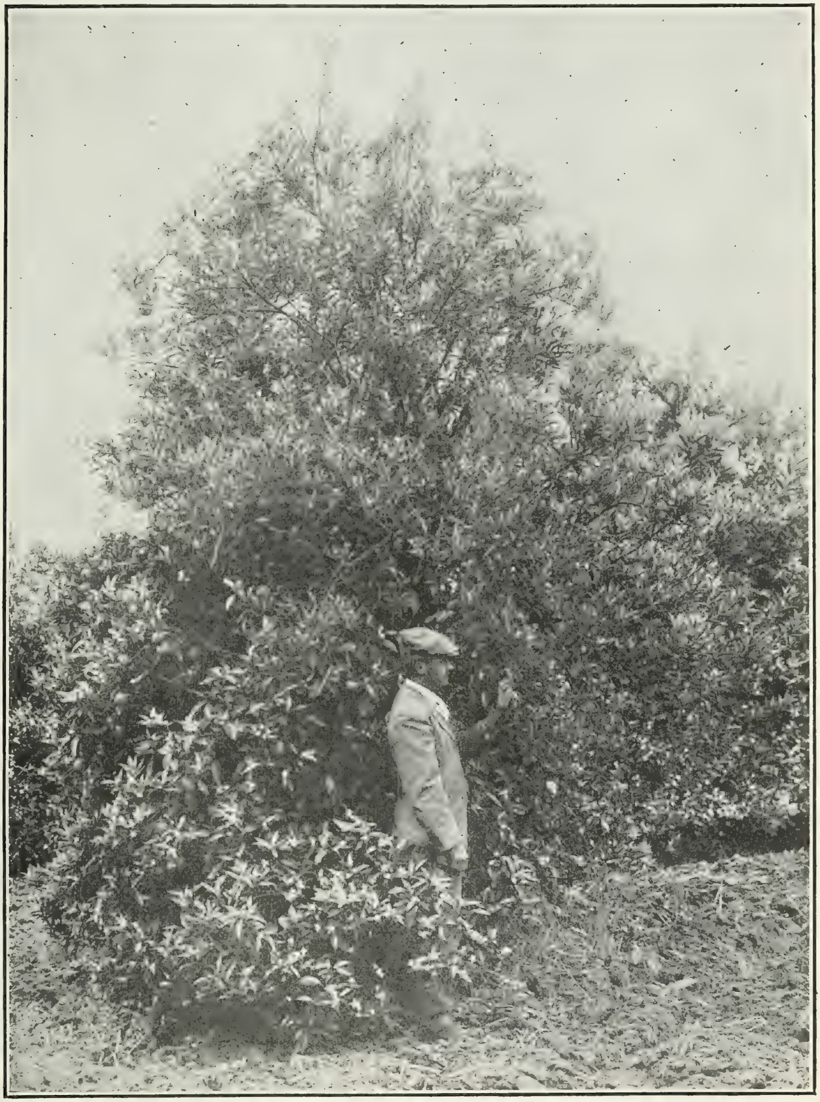


FIG. 7.—A Washington strain orange tree with a large limb sport of the Unproductive strain (shown at the right).

An investigation of the occurrence of the single-fruit variations found in the Washington trees, as illustrated in Plate XV, revealed their occurrence in other trees as limb sports and in other cases as individual trees. A limb sport of the Unproductive strain occurring in a Washington strain tree is shown in figures 7 and 8. Typical fruits of the limb sports borne by one tree grown from a single bud are shown in Plate XVI. This condition is conclusive evidence that the origin of the diverse strains of trees in Washington Navel orange orchards is due to the accidental propagation of limb sports, and it is an important reason for obtaining performance records for use in the selection of bud wood for propagation.

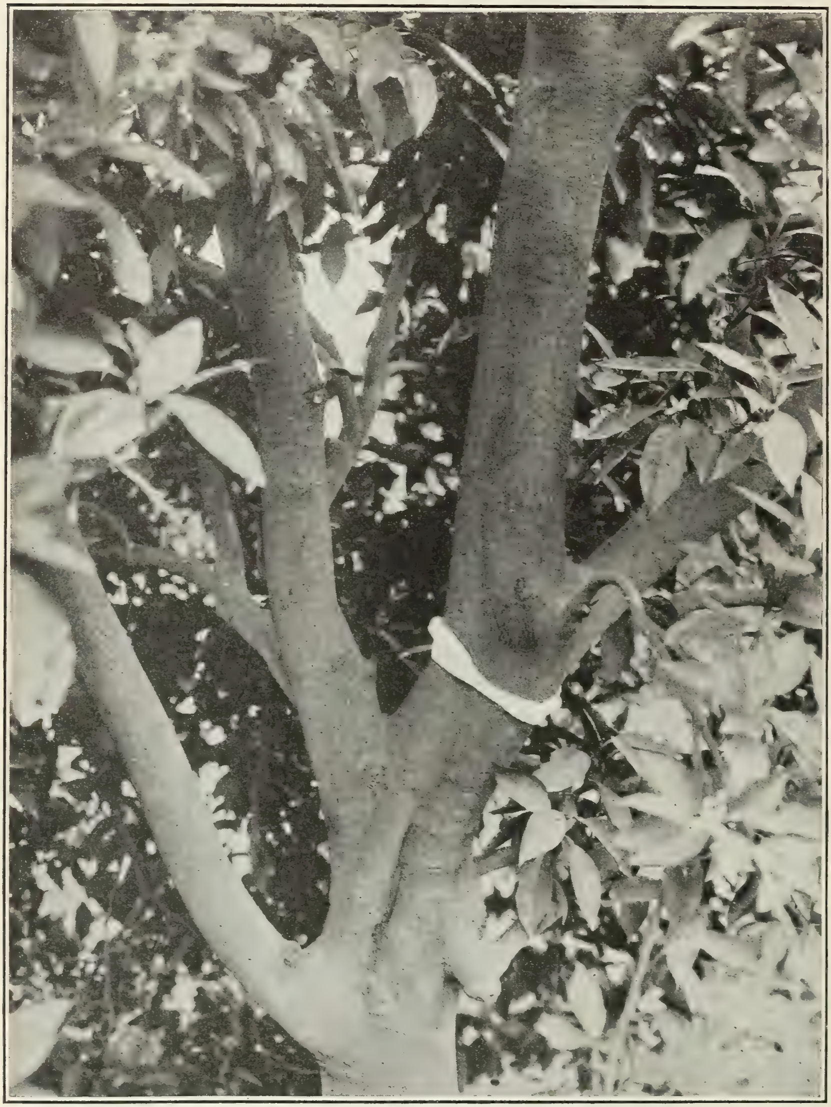


FIG. 8.—Trunk and main limbs of the tree shown in figure 7. The branch marked with the band of cloth is the Unproductive strain sport.

MINOR VARIATIONS OF FRUITS.

In addition to the widely different strains of the Washington Navel orange discovered in these investigations, many other less striking variations have been observed. The full significance and importance of these minor variations are not fully understood as yet, so that no extended discussion of their occurrence will be given at this time.

Among these variations are those similar to fruit chimeras, an example of which is shown in Plate XVII, figures 1 and 2. In some cases fruits show clearly marked sections of two or more distinct strains. For instance, examples have been found of oranges showing unmistakable Washington sections, with the remainder of the fruits showing the Thomson strain; again, a section possesses Golden Nugget characteristics, while the remainder is the Washington strain to all appearances. In a few cases parts of individual fruits have been observed which are unlike any known strains of the variety, an example of which is shown in Plate XVIII. As a rule, however, in the chimeralike forms studied so far, the variable individual fruit sections have been found to resemble some of the important strains previously described.

In the course of these investigations, many fruits having decidedly abnormal shapes or structures have been observed. For instance, twin oranges or those made up of two almost complete fruits with but a single calyx have been found. Other fruits have been seen which have resembled lemons externally to such an extent that persons not knowing of their occurrence on orange trees have thought them to be lemons. In a few fruits the navel has been found to be developed as a complete secondary orange outside of the primary fruit. Some fruits have been found with a loose rind, like that of the tangerine. A number of oranges have been observed without any apparent navel development but otherwise similar to Washington Navel fruits. A long list of similar cases might be cited, but in the light of our present knowledge of this subject they are apparently of little significance or importance to these investigations. Illustrations of some of these abnormal forms are shown in Plate XIX.

Some of the trees in the performance-record plats have shown but few or none of these minor fruit variations. Other trees have been prolific in the production of such abnormal fruits and these have not been used as sources of bud wood for propagation except for experimental purposes.

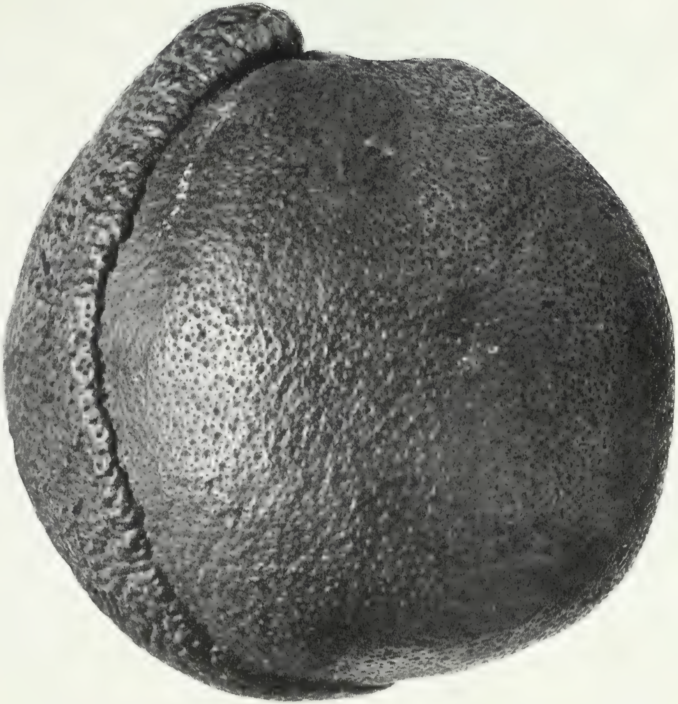
LESSONS TAUGHT BY THESE INVESTIGATIONS.

The performance-record data presented in this bulletin constitute but a small part of the records secured in these investigations of the Washington Navel orange. The data shown here have been limited to such as will, it is thought, illustrate the character and importance of the records. The complete data from the beginning of the investigation until the present time are open for inspection at any convenient time to all interested persons. The publication of the complete data would entail the presentation of such a large number of figures and tables as to make this bulletin cumbersome and in all probability defeat one of the objects of its issue, namely, to interest fruit growers and others in individual-tree performance-record work.

The information gained from these investigational individual-tree performance-record data and related observations made while securing them have been the basis upon which have been developed the present commercial methods of practice in California in securing individual-tree records, in the selection of undesirable trees in established orchards for top-working, and in the choice of trees as sources of bud wood for propagation.

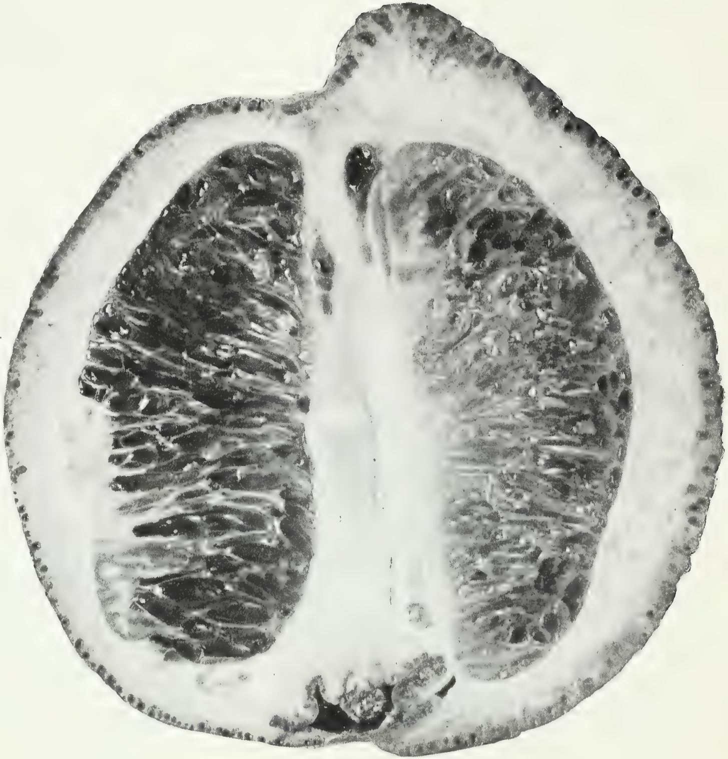
The conclusions presented here have not all been derived from a study of the performance-record data. Some phases of tree and fruit characteristics can not be recorded in figures or reproduced in photographs or other illustrations. These indefinable characteristics are of importance and usually are perceived only by those who have a natural liking for this kind of work. Though the tree records are the foundation upon which has been developed the practice of bud selection described in these pages, other factors, a knowledge of which has been gained from almost daily and continuous contact with the trees and fruits, have been taken into consideration. The instinct enabling an observer to distinguish one strain of tree or fruit from another and to select the best from among many individuals studied during the individual-tree performance-record work is almost, if not equally, as important as the actual tree records themselves. It is an essential and important qualification for anyone who expects to make any standardization through bud selection in the Washington Navel orange or other fruit variety. This point should be emphasized, for although the data secured from the individual-tree records is of the utmost importance from many standpoints, one of its most important uses is for the training of the judgment of the observer. The knowledge of trees and their fruits gained in this systematic manner from continuous and intimate contact with them becomes in time of genuine value in the study of varieties and their variations.

The differences in the characteristics of the various strains of the Washington Navel orange variety are often difficult to describe or illustrate. The behavior of some of these strains, as shown in this bulletin by means of performance records, descriptions, and photographs, is only a part of the story. The real differences of the trees and fruits must be seen before they can be fully appreciated



P16060HP

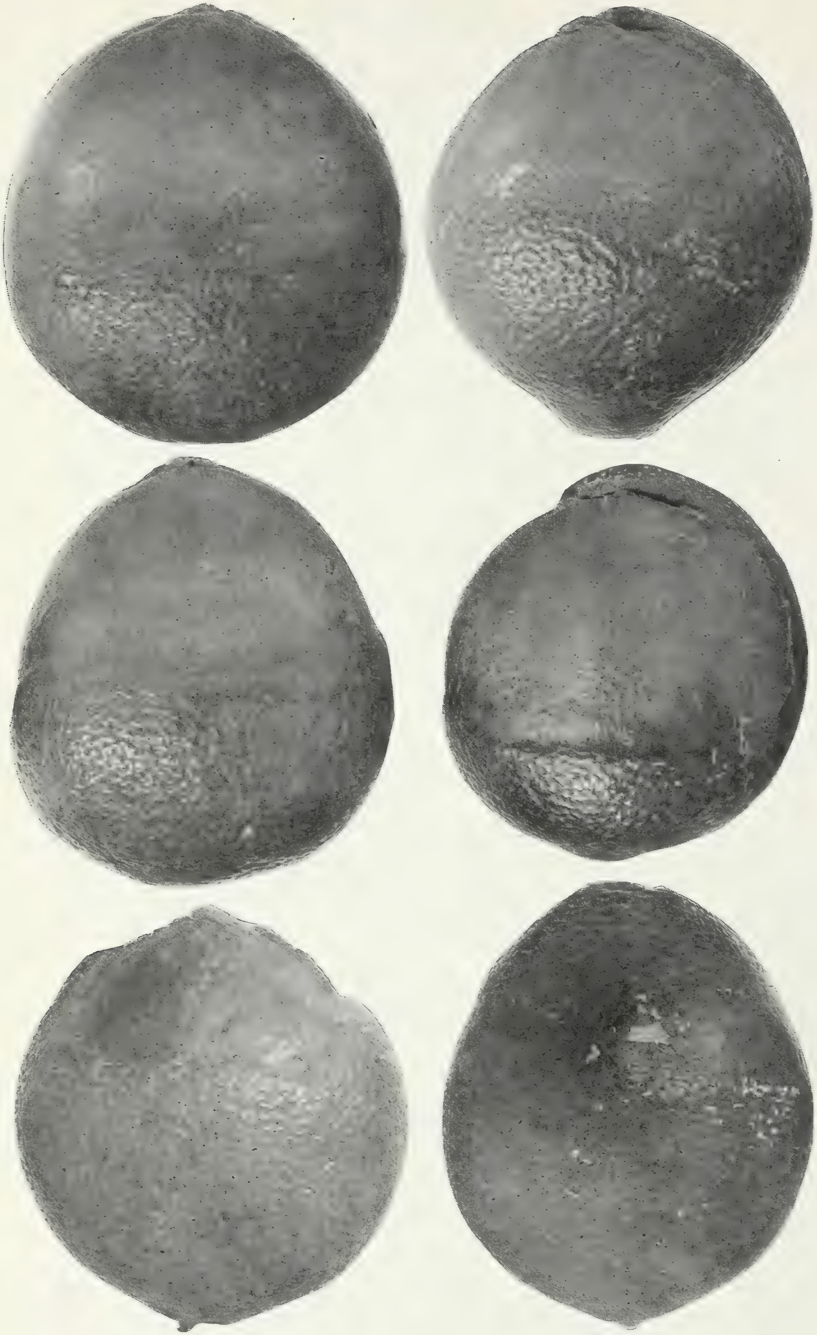
FIG. 1.—SIDE VIEW.



P16062HP

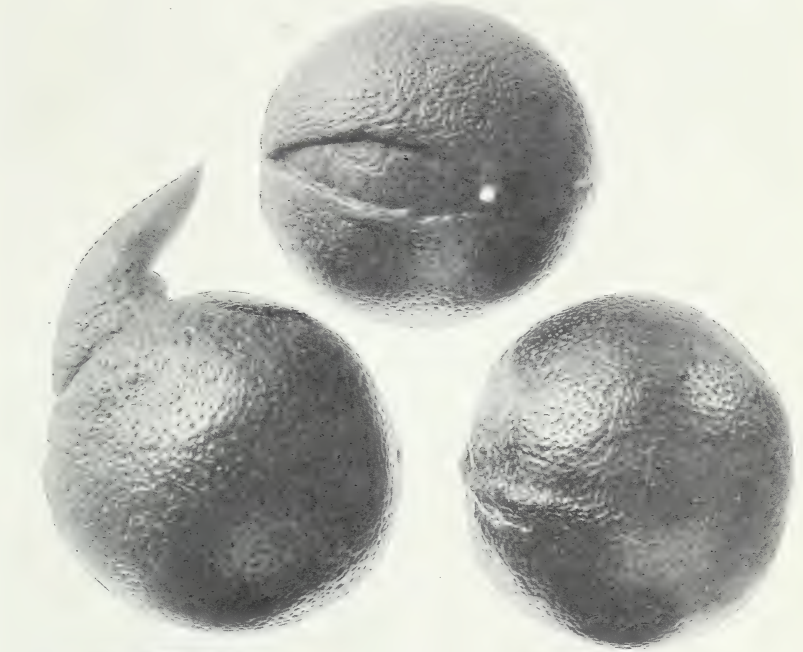
FIG. 2.—AXIAL SECTION.

A WASHINGTON NAVEL ORANGE, SHOWING A CONSPICUOUS DEVELOPMENT AS A RAISED, COARSE SECTION OF THE RIND.



P139A–HP, P142A–HP, AND P145A–HP

WASHINGTON NAVEL ORANGES, SHOWING IRREGULAR AREAS OF VERY SMOOTH RIND, SIMILAR TO THE THOMSON STRAIN, THE REMAINDER BEING THE TYPICAL WASHINGTON STRAIN IN TEXTURE AND APPEARANCE. THESE OCCUR AS LIMB SPORTS IN A TREE WHICH ALSO BEARS FRUITS OF THE WASHINGTON STRAIN.



P339A—HP

WASHINGTON NAVEL ORANGES, SHOWING ABNORMAL SHAPES AND MARKINGS, ALL BORNE ON ONE TREE GROWN FROM A SINGLE BUD.

and their importance in commercial fruit growing understood. With available means it is impossible adequately to present the characteristic differences of the strains so that one unacquainted with them can appreciate and understand them thoroughly.

Within the strains of the Washington Navel orange are marked variations, of importance commercially, but not so striking as the variations which distinguish the strains themselves. These individual-tree differences in the strains should be taken into account by the performance-record keeper and this knowledge utilized in the selection of trees for top-working or for use as sources of bud wood.

Fortunately, as discovered early in the history of these investigations, a marked correlation exists between the quantity and the quality of the fruits produced by the individual trees of the different strains. The most productive trees usually produce the largest proportion of fruits of the first grade and of the most valuable commercial sizes. Usually such trees show the fewest marked variations in fruits from the type of the strain to which they belong. This condition enables the fruit grower to gain from his records of production of the individual trees a reliable conception of their comparative value.

PRESENTATION OF DATA.

All the diagrams and tables presented herewith, with the exceptions noted in the following paragraph, have been prepared from individual-tree performance records of 481 Washington Navel orange trees located in groves planted in 1902 near Riverside, Cal. These records cover the period from 1912 to 1915, inclusive.

Of these performance-record trees, 151 were selected in 1910, so that data for six years have been secured from this number, as shown in Tables II and III. From the tree of the Yellow Thomson strain records have been secured for only three seasons, and from the eight Golden Nugget trees only two seasons' records have been obtained.

The performance-record trees include typical examples of seven of the thirteen most important strains and of four of the minor strains of the Washington Navel orange, as follows: Three hundred and sixty-five Washington, 51 Thomson, 35 Unproductive, 13 Yellow Washington, 8 Golden Nugget, 2 Wrinkled Australian, 1 Yellow Thomson, 4 Thomson-Washington, 2 Sporting Thomson, 1 Sporting Washington, and 1 Washington-Thomson. Examples of the other important strains and of several minor strains occur as individual fruit and limb variations in many of the trees under observation.

The average total crop of each of the trees from which performance records have been obtained for six successive seasons is shown in Table II. The percentage of Orchard (or first grade) fruit produced by each tree is also expressed, being figured on the basis of the weight of the crops, and the proportion of variable fruits, by number, is shown. When securing performance records, late bloom fruit and split fruit have been recorded, but such fruits have not been included with the variable fruits. In Table II the trees are ranked arbitrarily according to their average total crops, by weight, without regard to the grade or quality of the fruit or its uniformity. Hence, the position of any given tree in this table is not necessarily a true index of what its relative position would be if the classification were made on the basis of the commercial value of its fruit. The great number of characteristics of trees and fruit which must necessarily be taken into consideration in attempting a classification of this sort on the basis of the quality of the fruit and the desirability of the individual trees renders such a system inaccurate and unsatisfactory when dealing with such a large number of individuals as are represented here. On this account the basis of average annual yield was adopted.

TABLE II.—*Summarized statement of the average annual production of 151 Washington Navel orange trees for which detailed performance records were obtained for six years, 1910 to 1915, inclusive.*

[Detailed performance records of the trees marked with an asterisk (*) are shown in Table III. Trees marked with a dagger (†) are of the Unproductive strain; all others are of the Washington strain.]

Rank.	Tree designation.	Annual crop production, 6-year average.				Rank.	Tree designation.	Annual crop production, 6-year average.			
		Weight.	Number.	Orchard grade.	Variable fruits.			Weight.	Number.	Orchard grade.	Variable fruits.
		Pounds.		*P. ct.*	*P. ct.*			*Pounds.*		*P. ct.*	*P. ct.*
1......	*3-14-27	394.0	771	81.9	0.54	30......	10:1-30- 9	262.9	525	84.6	2.48
2......	*3-12-28	379.6	878	78.2	.91	31......	*10:1-30- 3	261.3	568	87.0	.35
3......	3-13-29	354.6	721	80.0	1.28	32......	3-17- 4	258.0	560	82.8	.57
4......	*3-14-26	350.2	711	85.7	.98	33......	10:1-29-10	256.8	568	85.3	.44
5......	3-12-29	343.4	709	80.9	.89	34......	6:1-58- 1	256.7	623	85.4	.40
6......	*3-13-28	341.3	744	81.2	.81	35......	10:1-32- 9	255.4	566	84.0	.18
7......	*3-12-30	325.2	643	77.2	.98	36......	3-14- 4	253.0	504	85.8	1.93
8......	*3-14-25	322.7	613	85.8	.78	37......	10:1-29- 3	251.9	528	84.2	.76
9......	4-27-16	322.7	655	81.2	.76	38......	*10:1-28- 8	249.3	575	82.6	.52
10......	*7:2-25- 1	311.2	654	84.7	.84	39......	10:1-29- 6	248.7	498	82.2	.50
11......	*7:2-37- 1	298.8	603	82.6	.46	40......	10:1-28- 6	248.1	518	85.2	1.06
12......	10:1-29- 8	291.7	591	81.6	1.02	41......	10:1-32- 3	247.9	516	85.4	.45
13......	4-28-14	291.3	643	83.7	.58	42......	7:1-53- 1	247.4	533	83.8	.75
14......	*10:1-28- 9	289.1	752	83.9	.47	43......	10:1-30- 7	246.1	505	80.8	.85
15......	7:2-32- 3	282.6	632	78.7	.44	44......	10:1-28- 5	244.9	519	87.8	1.02
16......	4-26-13	282.0	601	84.2	1.08	45......	10:1-29- 7	244.5	549	85.4	.87
17......	7:2-31- 1	281.1	614	83.0	.29	46......	10:1-29- 4	242.4	466	83.1	1.57
18......	10:1-32- 6	280.6	606	85.4	.38	47......	10:1-31- 6	242.4	500	86.4	.86
19......	*4-23- 3	280.5	564	83.6	.83	48......	4-32- 4	240.7	532	80.8	1.03
20......	10:1-29- 2	277.9	658	79.4	.68	49......	*10:1-28- 4	240.3	515	85.0	1.03
21......	7:2-25- 3	276.4	588	83.6	.31	50......	4-23- 2	239.3	479	84.0	.52
22......	4-18-19	275.7	633	79.2	.27	51......	10:1-32- 7	236.6	501	81.0	.96
23......	10:1-31- 7	272.5	610	81.6	.70	52......	7:2-31- 3	235.8	508	80.8	.85
24......	10:1-31- 5	272.0	544	85.7	.55	53......	7:2-30- 4	233.8	485	84.4	.52
25......	3-13- 4	272.0	553	82.6	.60	54......	10:1-29-11	233.3	584	86.5	.51
26......	*10:1-31- 4	269.0	561	84.4	.62	55......	10:1-30- 5	232.9	427	87.2	1.17
27......	10:1-32- 4	268.4	553	83.8	.63	56......	10:1-30- 2	232.7	509	84.8	2.02
28......	10:1-31-10	266.2	580	82.0	.86	57......	4-18-18	230.6	516	82.0	.87
29......	10:1-32-10	263.2	557	83.4	.45	58......	*4-30- 6	229.8	452	82.3	2.39

TABLE II.—*Summarized statement of the average annual production of 151 Washington Navel orange trees for which detailed performance records were obtained for six years, 1910 to 1915, inclusive*—Continued.

Rank.	Tree designation.	Annual crop production, 6-year average.				Rank.	Tree designation.	Annual crop production, 6-year average.			
		Weight.	Number.	Orchard grade.	Variable fruits.			Weight.	Number.	Orchard grade.	Variable fruits.
		Pounds.		*P. ct.*	*P. ct.*			*Pounds.*		*P. ct.*	*P. ct.*
59	10:1–28– 3	229.5	488	82.6	0.72	106	7:1–69– 8	150.6	444	80.3	0.90
60	10:1–28–10	227.6	510	84.6	.69	107	*7:1–65– 6	149.8	384	79.6	.52
61	4–21–31	224.6	484	79.8	.52	108	7:1–66–11	148.1	404	76.6	.32
62	4–29– 6	224.0	451	82.2	1.55	109	7:1–69–12	145.4	426	79.6	1.24
63	10:1–30– 1	223.9	489	85.5	.37	110	7:1–65– 7	144.0	371	80.4	.54
64	10:1–31– 1	223.8	487	83.8	.78	111	7:1–65–15	143.3	371	81.6	.49
65	10:1–31– 2	223.3	462	81.6	.61	112	*7:1–65–14	143.1	359	82.4	1.06
66	4–21–30	222.9	480	81.6	.25	113	7:1–66– 9	136.8	376	83.2	.61
67	*10:1–31– 9	220.7	435	83.4	1.26	114	7:1–66–13	136.4	345	80.2	1.30
68	10:1–30– 8	218.7	454	83.6	1.50	115	7:1–65– 9	134.7	363	82.0	.36
69	10:1–28– 2	218.3	468	83.2	.43	116	7:1–69–15	131.5	351	80.2	.28
70	4–17–34	217.5	460	79.6	.80	117	*7:1–69–10	128.6	364	82.0	1.10
71	10:1–32–11	217.4	451	86.4	.84	118	7:1–67–11	127.3	365	84.0	.36
72	10:1–32– 5	216.1	433	85.4	.42	119	7:1–66–15	126.4	333	82.2	.84
73	10:1–32– 8	215.9	449	83.6	2.52	120	7:1–66–14	122.6	349	79.4	.72
74	4–31– 2	214.4	454	78.6	.77	121	*7:1–66– 6	119.4	325	76.4	.92
75	10:1–31– 3	214.1	438	85.0	.80	122	7:1–69–14	118.7	312	79.6	.48
76	10:1–31– 8	211.0	433	83.8	.88	123	7:1–68–11	118.6	328	76.8	.85
77	3–14– 3	211.0	434	85.6	.85	124	7:1–69– 7	116.3	329	72.6	1.15
78	*10:1–28– 1	209.5	451	82.0	1.11	125	7:1–67–14	113.0	317	82.3	.57
79	4–23–28	209.4	465	79.6	.86	126	7:1–65–11	112.0	307	80.0	.81
80	10:1–31–11	208.3	479	82.6	1.00	127	7:1–69– 9	111.6	327	75.2	1.38
81	7:1–65–21	207.6	548	80.0	.55	128	7:1–66– 7	111.5	291	79.8	.69
82	10:1–32– 2	207.1	425	83.0	.78	129	7:1–67–10	111.4	317	79.0	.41
83	6:1–70– 9	205.6	476	86.0	.21	130	*7:1–67–15	110.1	318	78.8	.72
84	10:1–28–11	204.4	458	85.2	1.48	131	*†7:1–68– 7	108.0	319	73.4	.63
85	10:1–29– 5	202.4	430	85.2	.47	132	7:1–66– 8	106.4	308	76.3	.42
86	7:1–65–22	201.9	560	80.4	.59	133	7:1–65–12	105.6	293	81.6	.85
87	4–30– 5	201.3	393	80.6	1.27	134	7:1–68–15	105.2	284	78.3	1.51
88	*10:1–32– 1	201.2	435	82.2	.64	135	7:1–68– 6	104.4	297	74.6	1.11
89	10:1–29– 1	197.0	427	83.6	1.36	136	*7:1–68–13	100.8	284	78.2	.46
90	10:2– 7–13	195.5	419	78.6	.36	137	*†7:1–67–12	100.2	272	71.8	.11
91	4– 3– 6	193.0	344	82.6	.44	138	†7:1–68– 9	100.2	308	74.8	1.47
92	10:1–30– 4	192.7	388	83.0	.64	139	†7:1–67– 8	99.6	292	78.6	.51
93	*10:1–29– 9	188.0	379	85.0	.40	140	†7:1–67– 7	98.2	278	77.4	.90
94	4–31– 3	187.3	402	77.2	1.69	141	*†7:1–68–10	92.5	267	75.8	.75
95	10:1–30– 6	186.3	369	83.6	.81	142	†7:1–67– 9	85.5	252	69.6	3.37
96	4–17–16	183.6	348	79.2	.57	143	†7:1–67– 6	84.3	243	80.8	1.44
97	*4–18– 1	176.7	316	83.2	1.17	144	†7:1–68–14	83.1	239	73.0	.63
98	7:1–65– 8	173.7	468	84.8	.43	145	*†7:1–68– 8	78.5	217	72.6	.37
99	10:1–28– 7	173.7	339	83.6	1.71	146	†7:1–68–12	76.5	224	74.0	.58
100	*7:1–65–10	172.8	431	81.6	1.16	147	†7:1–66–12	72.6	198	65.2	2.52
101	7:1–69– 6	164.4	450	76.6	.40	148	*†7:1–67–13	69.5	198	76.3	.40
102	7:1–65–13	162.6	442	78.6	.45	149	†7:1–66–10	68.6	180	73.6	.17
103	*7:1–69–11	161.3	442	81.8	.52	150	*†7:1–65–23	62.7	178	75.2	1.40
104	10:1–30–11	153.8	344	84.2	1.98	151	*†7:1–52– 3	55.8	119	63.0	1.68
105	7:1–69–13	152.1	405	84.8	.25						

Table II shows not only the great variations in the average quantity of fruit produced by different individual trees, but also the percentages of the Orchard grade, or first-grade, fruit. The number of variable fruits shows the variations in the uniformity of the fruit.

To indicate more fully and accurately the real variations between the different trees and their true relative values to the investigator and the orchardist, it is necessary to consider the yearly record of each tree.

The complete performance records of 35 representative trees of the 151 on which data have been secured for six years are given in Table III. This list was made by selecting within each strain those trees whose average total crops were nearest the multiples of 10 pounds. This basis was adopted in order to remove all chance for any personal bias in the selection of the trees.

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II.*

[The weights of annual production are expressed in pounds and ounces, but the fractional averages are expressed decimally in pounds.]

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
1. Washington strain:																							
Orchard grade—																							
1910	382– 7	738	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	271–14	385	0– 4	1	0– 0	0	0–12	2	1–10	4	4–10	10	27– 9	52	6–11	12	54– 4	86	90–10	124	85– 8	94	....
1912	315– 0	581	1– 5	5	2– 8	8	4– 5	12	27–13	68	29– 1	64	84– 5	163	28–15	52	77–14	128	41– 0	59	17–14	22	....
1913	152–14	310	0– 4	1	0– 5	1	7– 7	23	13–10	37	25– 3	59	34–14	72	41–14	74	14–11	23	6–14	10	7–12	10	....
1914	461– 8	946	1–10	8	5– 6	19	19–14	59	51–15	133	126–10	277	125–12	238	99– 6	167	21–14	33	8– 4	11	0–13	1	....
1915	352– 2	661	0– 0	0	0– 9	2	4–12	14	16– 4	43	36– 5	85	62–13	130	120– 9	217	57–13	94	34– 5	51	18–12	25	....
Average	**322.6**	**604**	**0.7**	**3**	**1.8**	**6**	**7.4**	**22**	**22.3**	**57**	**44.4**	**99**	**67.1**	**131**	**59.5**	**104**	**45.3**	**73**	**36.2**	**51**	**26.1**	**30**	....
Standard grade—																							
1910	7–10	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	27–15	45	0– 0	0	0– 0	0	0– 0	0	0–14	2	1– 7	3	7–14	14	1–12	3	7–14	12	8– 2	11	0– 0	0	....
1912	23–11	57	2– 0	9	1–10	5	2–11	7	4–14	12	3–10	8	5–12	11	1– 3	2	1–15	3	0– 0	0	0– 0	0	....
1913	34– 7	80	0– 3	1	1– 8	5	3–10	11	2– 0	6	7– 3	18	12– 8	26	3– 3	6	1– 2	2	3– 2	5	0– 0	0	....
1914	24– 7	58	1– 1	6	0–15	3	2–10	7	2–12	7	6–12	16	4– 9	9	4– 8	8	1– 4	2	0– 0	0	0– 0	0	....
1915	78–12	151	0– 5	2	0– 9	2	2– 5	7	2– 4	6	5– 2	13	16– 8	35	19– 2	35	15– 6	26	11–14	18	5– 5	7	....
Average	**32.8**	**68**	**0.7**	**4**	**0.9**	**3**	**2.3**	**6**	**2.6**	**7**	**4.8**	**12**	**9.4**	**19**	**6.0**	**11**	**5.4**	**9**	**4.6**	**7**	**1.1**	**1**	....
Cull fruits—																							
1910	0– 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	23–14	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	16– 3	41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	103–12	311	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	17– 4	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	69–13	165	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**38.5**	**99**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																							
1910	390- 1	757	2- 9	10	11-12	36	15- 8	41	48-11	117	66-10	141	98- 0	189	28-14	49	70-11	111	28- 7	40	18-15	23	....
1911	324- 5	468	0- 4	1	0- 0	0	0-12	2	2- 8	6	6- 1	13	35- 7	66	8- 7	15	62- 2	98	98-12	135	85- 8	94	....
1912	354-14	679	3- 5	14	4- 2	13	7- 0	19	32-11	80	32-11	72	90- 1	174	30- 2	54	79-13	131	41- 0	59	17-14	22	0
1913	291- 1	701	0- 7	2	1-13	6	11- 1	34	15-10	43	32- 6	77	47- 6	98	45- 1	80	15-13	25	10- 0	15	7-12	10	0
1914	503- 3	1,042	2-11	14	6- 5	22	22- 8	66	54-11	140	133- 6	293	130- 5	247	103-14	175	23- 2	35	8- 4	11	0-13	1	8
1915	500-11	977	0- 5	2	1- 2	4	7- 1	21	18- 8	49	41- 7	98	79- 5	165	139-11	252	73- 3	120	46- 3	69	24- 1	32	9
Average	**394.0**	**771**	**1.6**	**7**	**4.2**	**14**	**10.6**	**30**	**28.8**	**73**	**52.1**	**116**	**80.1**	**156**	**59.3**	**104**	**54.1**	**87**	**38.8**	**55**	**25.8**	**30**	**4**
2. Washington strain:																							
Orchard grade—																							
1910	319- 7	620	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	212- 2	321	0- 4	1	0- 5	1	0-12	2	2- 7	6	5- 1	11	22-15	45	7- 4	13	52-10	87	61-12	88	57-12	67	....
1912	317- 3	744	6-12	26	24- 5	78	29- 7	84	74- 0	186	64-12	145	74- 9	150	10- 9	20	29- 7	50	3- 6	5	0- 0	0	....
1913	225- 5	564	2- 3	10	9-11	38	30- 0	97	39-14	109	62- 6	151	42-14	90	33- 2	61	3- 2	5	1- 5	2	0-12	1	....
1914	435- 6	1,083	5- 9	26	27- 0	93	69-12	208	85- 6	224	128- 3	298	85-15	176	29-10	52	3- 4	5	0-11	1	0- 0	0	....
1915	270-14	599	0- 0	0	1- 5	5	11- 0	36	24- 7	69	62- 5	154	59-14	130	78- 3	150	19- 9	33	11-15	19	2- 4	3	....
Average	**296.7**	**655**	**3.0**	**13**	**12.5**	**43**	**28.2**	**85**	**45.2**	**119**	**64.5**	**152**	**57.2**	**118**	**31.8**	**59**	**21.6**	**36**	**15.8**	**23**	**12.2**	**14**	....
Standard grade—																							
1910	8- 6	21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	33-12	57	0- 0	0	0- 0	0	0-12	2	1-10	4	1-14	4	8- 8	16	1- 2	2	6- 0	10	13-14	19	0- 0	0	....
1912	24- 2	75	8- 5	36	2-14	9	2- 9	7	3- 0	8	2-10	6	3- 0	6	1- 2	2	0-10	1	0- 0	0	0- 0	0	....
1913	69- 1	212	9- 4	46	9- 8	35	13-14	43	6- 0	17	15- 6	39	9- 2	21	3- 8	7	2- 7	4	0- 0	0	0- 0	0	....
1914	40- 6	116	4- 3	22	5-13	19	9-15	28	7- 3	18	6-15	16	5- 5	11	1- 0	2	0- 0	0	0- 0	0	0- 0	0	....
1915	141-15	326	1-15	10	3- 4	12	8-10	27	11- 3	32	20- 5	52	49- 0	107	23- 0	44	13- 3	24	10- 0	16	1- 7	2	....
Average	**52.9**	**134**	**4.7**	**23**	**4.3**	**15**	**7.2**	**21**	**5.8**	**16**	**9.4**	**23**	**15.0**	**32**	**6.0**	**11**	**4.5**	**8**	**4.8**	**7**	**0.3**	**0.4**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	61-12	109	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	14- 2	47	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	65- 6	251	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	8-13	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	30-14	97	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**30. 1**	**89**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	327-13	641	1- 8	7	6- 2	19	10- 6	30	33- 1	81	53- 8	116	96- 2	186	28- 4	50	68- 0	110	21-12	31	9- 2	11	....
1911	306-10	487	0- 4	1	0- 5	1	1- 8	4	4- 1	10	6-15	15	31- 7	61	8- 6	15	58-10	97	75-10	107	57-12	67	....
1912	355- 7	866	15- 1	62	27- 3	87	32- 0	91	77- 0	194	67- 6	151	77- 9	156	11-11	22	30- 1	51	3- 6	5	0- 0	0	0
1913	359-12	1,027	11- 7	56	19- 3	73	43-14	140	45-14	126	77-12	190	52- 0	111	36-10	68	5- 9	9	1- 5	2	0-12	1	6
1914	484- 9	1,227	9-12	48	32-13	112	79-11	236	92- 9	242	135- 2	314	91- 4	187	30-10	54	3- 4	5	0-11	1	0- 0	0	11
1915	443-11	1,022	1-15	10	4- 9	17	19-10	63	35-10	101	82-10	206	108-14	237	101- 3	194	32-12	57	21-15	35	3-11	5	15
Average	**379.6**	**878**	**6.7**	**31**	**15.0**	**52**	**31.2**	**94**	**48.0**	**126**	**70.5**	**165**	**76.2**	**156**	**36.1**	**67**	**33.1**	**55**	**20.8**	**30**	**11.9**	**14**	**8**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
4. Washington strain:																							
Orchard grade—																							
1910	369-10	717	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1911	332-11	474	0- 0	0	0- 0	0	0- 6	1	0-14	2	5-10	12	25- 5	48	8-14	16	70- 0	113	124- 4	172	97- 6	110	...
1912	257-10	496	0-12	3	4- 7	14	5-11	16	19- 3	49	27-12	62	70-14	142	14- 9	27	68- 3	115	35- 0	53	11- 3	15	...
1913	143- 7	328	0- 7	2	2- 4	9	17- 4	54	15- 6	39	32- 8	79	35- 1	74	26-10	50	5- 1	8	7- 6	11	1- 8	2	...
1914	393-12	891	0-14	4	6- 4	22	29- 2	86	63- 0	166	130- 4	298	102- 6	207	49- 7	89	11- 0	17	0-11	1	0-12	1	...
1915	303- 7	596	0- 0	0	0- 4	1	3- 9	11	8-14	24	39-14	94	77-11	163	106-11	197	41-13	69	21- 1	32	3-10	5	...
Average	**300.1**	**584**	**0.4**	**2**	**2.6**	**9**	**11.2**	**34**	**21.5**	**56**	**47.2**	**109**	**62.3**	**127**	**41.2**	**76**	**39.2**	**64**	**37.7**	**54**	**22.9**	**27**	...
Standard grade—																							
1910	9- 8	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1911	24- 5	46	0- 0	0	0- 0	0	0- 0	0	2- 0	5	4- 1	9	7- 6	14	2- 4	4	8-10	14	0- 0	0	0- 0	0	...
1912	16- 2	38	0-12	4	1- 0	3	0-12	2	4- 2	10	4- 3	9	3-10	7	1- 1	2	0-10	1	0- 0	0	0- 0	0	...
1913	53- 3	135	3- 0	13	3-15	14	4-10	15	4-10	13	9-13	26	15-15	34	4- 7	9	1-12	3	3-12	6	1- 5	2	...
1914	21- 8	60	1- 7	9	2- 0	7	3-12	11	3- 1	8	4-13	12	2- 4	5	3- 0	6	0- 9	1	0-10	1	0- 0	0	...
1915	50- 9	104	0- 3	1	0- 4	1	1-11	5	1- 9	4	7- 7	18	13-14	30	12- 2	23	7-12	13	5-11	9	0- 0	0	...
Average	**29.2**	**68**	**1.1**	**5**	**1.4**	**5**	**2.2**	**7**	**3.1**	**8**	**6.1**	**15**	**8.6**	**18**	**4.6**	**9**	**3.9**	**6**	**2.0**	**3**	**0.3**	**0.4**	**0.6**
ull fruits—																							
1910	0- 0	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1911	20- 4	29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1912	10- 7	33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1913	61- 3	202	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1914	4-12	16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1915	29- 0	76	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Average	**20.9**	**59**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Total crop—																							
1910	379- 2	742	2- 4	10	9-14	29	12- 9	35	50-15	125	53- 0	116	101- 8	194	36-10	63	71-10	114	19-10	29	21- 2	27	....
1911	377- 4	549	0- 0	0	0- 0	0	0- 6	1	2-14	7	9-11	21	32-11	62	11- 2	20	78-10	127	124- 4	172	97- 6	110	....
1912	284- 3	567	1- 8	7	5- 7	17	6- 7	18	23- 5	59	31-15	71	74- 8	149	15-10	29	68-13	116	35- 0	53	11- 3	15	3
1913	257-13	665	3- 7	15	6- 3	23	21-14	69	20- 0	52	42- 5	105	51- 0	108	31- 1	59	6-13	11	11- 2	17	2-13	4	1
1914	420- 0	967	2- 5	13	8- 4	29	32-14	97	66- 1	174	135- 1	310	104-10	212	52- 7	95	11- 9	18	1- 5	2	0-12	1	6
1915	383- 0	776	0- 3	1	0- 8	2	5- 4	16	10- 7	28	47- 5	112	91- 9	193	118-13	220	49- 9	82	26-12	41	3-10	5	18
Average	**350.2**	**711**	**1.6**	**8**	**5.1**	**17**	**13.2**	**39**	**28.9**	**74**	**53.2**	**123**	**76.0**	**153**	**44.3**	**81**	**47.8**	**78**	**36.4**	**52**	**22.8**	**27**	**7**
6. Washington strain:																							
Orchard grade—																							
1910	281-15	550	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	274- 0	386	0- 0	0	0- 6	1	0- 0	0	0-14	2	5-10	12	21-10	41	9-13	17	40-12	66	111-10	154	83- 5	93	....
1912	268- 2	585	4- 8	16	14-10	45	17-13	50	49- 1	121	45-13	102	73- 4	145	12- 2	22	37- 9	63	9- 6	16	4- 0	5	....
1913	184-12	469	1-11	8	4- 5	15	27- 4	89	31-11	86	54-10	136	40- 9	89	23- 7	44	1- 3	2	0- 0	0	0- 0	0	....
1914	369- 2	875	3-10	17	10-11	37	37- 6	112	63-12	170	133- 0	307	79-10	161	36- 0	63	4- 6	7	0-11	1	0- 0	0	....
1915	286- 0	580	0- 0	0	1- 7	5	3-14	12	12-10	35	43- 6	106	62- 8	137	73- 9	144	41- 5	71	31- 1	48	16- 4	22	....
Average	**277.3**	**574**	**2.0**	**8**	**6.3**	**21**	**17.3**	**53**	**31.6**	**83**	**56.5**	**133**	**55.5**	**115**	**31.0**	**58**	**25.0**	**42**	**30.1**	**44**	**20.7**	**24**	....
Standard grade—																							
1910	7- 9	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	21- 2	36	0- 4	1	0- 0	0	0- 0	0	0-12	2	1-14	4	2-11	5	1-11	3	8-12	14	5- 2	7	0- 0	0	....
1912	21-10	67	6- 7	29	1-13	6	3- 3	9	3-13	10	2- 3	5	3-10	7	0- 0	0	0- 9	1	0- 0	0	0- 0	0	....
1913	52- 5	138	1-15	9	2-13	10	7- 4	23	4- 8	13	12- 7	32	13-12	32	7- 8	15	1- 8	3	0-10	1	0- 0	0	....
1914	31-12	85	2-10	14	1-14	6	5-10	16	4- 6	11	9- 7	22	6- 3	13	1-10	3	0- 0	0	0- 0	0	0- 0	0	....
1915	109-10	241	1- 3	9	1- 5	5	5-12	18	5- 5	15	14- 5	36	30- 9	67	23- 4	45	12-15	23	11- 6	18	3-10	5	....
Average	**40.7**	**98**	**2.5**	**12**	**1.6**	**5**	**4.4**	**13**	**3.8**	**10**	**8.1**	**20**	**11.4**	**25**	**6.8**	**13**	**4.8**	**8**	**2.9**	**5**	**0.7**	**1**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	16- 6	26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	11- 2	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	60- 7	209	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	5-10	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	46- 0	140	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**23.3**	**72**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	289- 8	570	3- 2	14	11- 3	35	12- 6	35	30- 6	75	37- 0	80	76- 1	145	26- 2	46	53- 3	86	22- 5	32	17-12	22	....
1911	311- 8	448	0- 4	1	0- 6	1	0- 0	0	1-10	4	7- 8	16	24- 5	46	11- 8	20	49- 8	80	116-12	161	83- 5	93	....
1912	300-14	690	10-15	45	16- 7	51	21- 0	59	52-14	131	48- 0	107	76-14	152	12- 2	22	38- 2	64	9- 6	16	4- 0	5	0
1913	297- 8	816	3-10	17	7- 2	25	34- 8	112	36- 3	99	67- 1	168	54- 5	121	30-15	59	2-11	5	0-10	1	0- 0	0	1
1914	406- 8	977	6- 4	31	12- 9	43	43- 0	128	68- 2	181	142- 7	329	85-13	174	37-10	66	4- 6	7	0-11	1	0- 0	0	4
1915	441-10	961	1- 3	9	2-12	10	9-10	30	17-15	50	57-11	142	93- 1	204	96-13	189	54- 4	94	42- 7	66	19-14	27	19
Average	**341.3**	**744**	**4.2**	**19**	**8.4**	**28**	**20.1**	**61**	**34.5**	**90**	**60.0**	**140**	**68.4**	**140**	**35.9**	**67**	**33.7**	**56**	**32.1**	**46**	**20.7**	**25**	**6**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
7. Washington strain:																							
Orchard grade—																							
1910	302– 7	548																					
1911	214– 1	299	0– 0	0	0– 0	0	0– 6	1	0– 0	0	2– 6	5	22– 4	42	5– 3	9	41–14	66	69–14	96	72– 2	80	
1912	257– 3	501	2– 9	9	6–13	21	9–15	27	25– 4	62	34– 8	75	66– 7	130	15– 8	28	52– 5	87	33– 0	48	10–14	14	
1913	113–14	235	0– 0	0	1– 7	5	3– 9	11	12– 7	33	22– 3	52	26– 5	53	30– 0	54	10–11	17	2–12	4	4– 8	6	
1914	401– 9	915	2–14	13	13– 8	46	48– 4	140	66–13	169	127– 9	284	98–15	190	38– 4	65	5– 6	8	0– 0	0	0– 0	0	
1915	217–14	383	0– 0	0	0– 0	0	0–10	2	3– 0	8	13– 6	31	26– 2	54	70– 9	136	42–12	67	38–15	57	22– 8	28	
Average	**251.2**	**480**	**1.1**	**4**	**4.4**	**14**	**12.8**	**36**	**21.5**	**54**	**40.0**	**89**	**48.0**	**94**	**31.9**	**58**	**30.6**	**49**	**28.9**	**41**	**22.0**	**26**	
Standard grade—																							
1910	9– 6	21																					
1911	18– 9	29	0– 0	0	0– 0	0	0– 0	0	0–14	2	2– 8	5	2–10	5	1– 2	2	7– 0	10	4– 7	5	0– 0	0	
1912	13– 5	34	2– 1	9	1–14	6	1– 0	3	1–12	4	1– 7	3	2–11	5	0–10	1	1–14	3	0– 0	0	0– 0	0	
1913	35–12	82	0– 6	2	2–14	10	3–13	11	1– 9	4	6– 7	16	9–14	21	4– 5	8	3– 2	5	3– 6	5	0– 0	0	
1914	39–12	107	3– 3	17	5– 8	18	6–13	19	6– 6	16	5– 6	12	11– 6	23	1– 2	2	0– 0	0	0– 0	0	0– 0	0	
1915	93–12	167	0– 0	0	0– 0	0	1–15	6	2– 5	6	5– 0	12	18– 5	38	22– 0	40	18– 3	30	21–14	30	4– 2	5	
Average	**35.1**	**73**	**1.1**	**6**	**2.1**	**7**	**2.7**	**8**	**2.6**	**6**	**4.2**	**10**	**9.0**	**18**	**5.8**	**11**	**6.0**	**10**	**5.9**	**8**	**0.8**	**1**	
Cull fruits—																							
1910	0– 0	0																					
1911	52– 0	80																					
1912	15–14	42																					
1913	68– 9	204																					
1914	10– 4	30																					
1915	87– 1	185																					
Average	**39.0**	**90**																					

Total crop—																							
1910	311-13	569	2- 0	8	4- 1	13	6- 7	18	41- 2	96	44- 4	92	72- 8	132	29- 7	49	61- 6	96	32- 6	43	18- 4	22	....
1911	284-10	408	0- 0	0	0- 0	0	0- 6	1	0-14	2	4-14	10	24-14	47	6- 5	11	48-14	76	74- 5	101	72- 2	80	....
1912	286- 6	577	4-10	18	8-11	27	10-15	30	27- 0	66	35-15	78	69- 2	135	16- 2	29	54- 3	90	33- 0	48	10-14	14	1
1913	218- 3	521	0- 6	2	4- 5	15	7- 6	22	14- 0	37	28-10	68	36- 3	74	34- 5	62	13-13	22	6- 2	9	4- 8	6	5
1914	451- 9	1,052	6- 1	30	19- 0	64	55- 1	159	73- 3	185	132-15	296	110- 5	213	39- 6	67	5- 6	8	0- 0	0	0- 0	0	7
1915	398-11	735	0- 0	0	0- 0	0	2- 9	8	5- 5	14	18- 6	43	44- 7	92	92- 9	176	60-15	97	60-13	87	26-10	33	12
Average	**325.2**	**643**	**2.2**	**10**	**6.0**	**20**	**13.8**	**39**	**26.9**	**67**	**44.2**	**98**	**59.6**	**115**	**36.3**	**65**	**40.7**	**65**	**34.4**	**48**	**22.1**	**26**	**6**
8. Washington strain:																							
Orchard grade—																							
1910	426-11	802	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	313-14	434	0- 0	0	0- 0	0	0- 0	0	0-14	2	7- 7	16	24- 0	45	7- 0	12	60- 8	96	129- 7	165	84-10	98	....
1912	253-11	453	0-14	3	2- 6	7	4- 2	11	19- 7	47	25- 3	54	72- 2	130	13- 7	24	63- 1	103	35- 3	51	17-14	23	....
1913	111- 6	227	0- 0	0	0- 8	2	5-14	18	7-10	20	21- 2	49	28-11	58	31- 9	56	7-11	12	6- 3	9	2- 2	3	....
1914	379-12	849	1- 4	6	8-10	30	27- 0	78	75- 1	192	117-14	267	90-12	178	44-15	77	10-11	16	3- 9	5	0- 0	0	....
1915	176- 2	279	0- 0	0	0- 0	0	0- 5	1	2- 2	5	8- 5	18	19- 8	38	40- 6	69	43- 6	66	34-13	48	27- 5	34	....
Average	**276.9**	**507**	**0.4**	**2**	**2.3**	**8**	**7.5**	**22**	**21.0**	**53**	**36.0**	**81**	**47.0**	**90**	**27.5**	**48**	**37.1**	**59**	**41.8**	**56**	**26.4**	**32**	....
Standard grade—																							
1910	5- 5	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	25- 2	46	0- 0	0	0-10	2	0- 0	0	2- 0	5	3- 6	7	8- 6	15	1-12	3	9- 0	14	0- 0	0	0- 0	0	....
1912	13- 5	30	0-11	3	0- 5	1	1- 1	3	2- 0	5	4- 4	9	2- 0	4	2- 6	4	0-10	1	0- 0	0	0- 0	0	....
1913	37- 6	86	0-11	3	2- 8	9	3- 6	10	3- 1	8	7-11	18	8- 0	17	6-15	13	2- 5	4	2- 1	3	0-12	1	....
1914	26- 8	70	2- 8	13	1- 7	5	5- 0	14	2- 5	6	6- 7	15	6- 8	13	1-11	3	0-10	1	0- 0	0	0- 0	0	....
1915	54-14	90	0- 0	0	0- 9	2	0-11	2	0- 6	1	3-14	9	8- 6	17	6-13	12	5- 3	8	17-14	25	11- 2	14	....
Average	**27.1**	**56**	**0.8**	**4**	**1.1**	**4**	**2.0**	**6**	**2.0**	**5**	**5.1**	**12**	**6.7**	**13**	**3.9**	**7**	**3.8**	**6**	**4.0**	**6**	**2.4**	**3**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	17- 5	27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	22-10	61	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	50- 7	162	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	4- 5	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	17-12	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**18.7**	**50**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	432- 0	816	3- 0	12	7-10	23	17-14	48	51-12	123	58- 7	122	103- 2	192	29-13	51	102-14	161	33- 8	53	24- 0	31	....
1911	356- 5	507	0- 0	0	0-10	2	0- 0	0	2-14	7	10-13	23	32- 6	60	8-12	15	69- 8	110	129- 7	165	84-10	98	....
1912	289-10	544	1- 9	6	2-11	8	5- 3	14	21- 7	52	29- 7	63	74- 2	134	15-13	28	63-11	104	35- 3	51	17-14	23	2
1913	199- 3	475	0-11	3	3- 0	11	9- 4	28	10-11	28	28-13	67	36-11	75	38- 8	69	10- 0	16	8- 4	12	2-14	4	1
1914	410- 9	932	3-12	19	10- 1	35	32- 0	92	77- 6	198	124- 5	282	97- 4	191	46-10	80	11- 5	17	3- 9	5	0- 0	0	10
1915	248-12	407	0- 0	0	0- 9	2	1- 0	3	2- 8	6	12- 3	27	27-14	55	47- 3	81	48- 9	74	52-11	73	38- 7	48	6
Average	**322.7**	**613**	**1.5**	**7**	**4.1**	**14**	**10.9**	**31**	**27.8**	**69**	**44.0**	**97**	**61.9**	**118**	**31.1**	**54**	**51.0**	**80**	**43.8**	**59**	**27.9**	**34**	**5**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
10. Washington strain:																							
Orchard grade—																							
1910	218- 2	473	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	366-10	608	0- 9	2	2-11	8	3- 0	8	14-3	33	24- 4	50	78- 9	145	22- 0	38	92- 9	149	79-14	115	48-15	60	....
1912	308-11	690	5-10	21	12-11	40	18- 2	54	67-7	170	62- 4	138	84- 0	169	12- 6	23	31-11	55	6- 8	10	8- 0	10	....
1913	165- 1	338	0-12	3	6- 1	19	11- 5	33	12-8	32	36-15	81	41- 3	79	32- 9	56	14- 2	22	5- 0	7	4-10	6	....
1914	287- 3	640	1-12	7	6- 2	21	27-15	81	57-3	143	98- 0	218	50- 3	96	27-12	48	7- 4	11	9- 8	13	1- 8	2	....
1915	236- 1	421	0- 0	0	0- 5	1	4- 3	13	9-1	24	25-14	59	39-14	80	71-12	122	26-12	42	32- 0	46	26- 4	34	....
Average	**263.6**	**528**	**1.7**	**7**	**5.6**	**18**	**12.9**	**38**	**32.1**	**80**	**49.5**	**109**	**58.8**	**114**	**33.3**	**57**	**16.5**	**56**	**26.6**	**38**	**17.9**	**22**	....
Standard grade—																							
1910	16- 0	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	21- 6	42	0- 0	0	1- 1	3	1-2	3	2-1	5	3-4	7	5- 3	10	1-3	2	7- 8	12	0- 0	0	0- 0	0	....
1912	30- 4	81	3-11	15	5- 6	17	6-4	17	3-9	9	6-2	13	4- 2	8	0-0	0	1- 2	2	0- 0	0	0- 0	0	....
1913	43- 5	104	2- 2	9	5- 6	17	6-8	18	4-0	10	8-9	19	8-10	17	6-2	11	0-10	1	1- 6	2	0- 0	0	....
1914	42-14	123	5- 3	26	8- 0	25	13-1	36	5-6	13	5-0	11	4- 6	9	0-9	1	0-10	1	0-11	1	0- 0	0	....
1915	39- 8	83	0- 8	2	0-13	3	1-5	4	2.6	6	4-0	10	14- 6	30	6-8	12	3- 0	6	5-12	9	0-14	1	....
Average	**32.2**	**79**	**2.3**	**10**	**4.1**	**13**	**5.7**	**16**	**3.5**	**9**	**5.4**	**12**	**7.3**	**15**	**2.9**	**5**	**2.6**	**4**	**1.6**	**2**	**0.2**	**0.2**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	8- 7	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	27-12	86	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	24- 8	64	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	15-12	73	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	15-12	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**15.4**	**47**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																							
1910	234- 2	513	3- 0	13	4- 0	15	9- 0	29	17-11	49	40- 2	105	45- 9	103	39- 2	74	35-15	63	28-13	46	10-14	16	....
1911	396- 7	666	0- 9	2	3-12	11	4- 2	11	16- 4	38	27- 8	57	83-12	155	23- 3	40	100- 1	161	79-14	115	48-15	60	....
1912	366-11	857	9- 5	36	18- 1	57	24- 6	71	71- 0	179	68- 6	151	88- 2	177	12- 6	23	32-13	57	6- 8	10	8- 0	10	8
1913	232-14	506	2-14	12	11- 7	36	17-13	51	16- 8	42	45- 8	100	49-13	96	38-11	67	14-12	23	6- 6	9	4-10	6	2
1914	345-13	836	6-15	33	14- 2	46	41- 0	117	62- 9	156	103- 0	229	54- 9	105	28- 5	49	7-14	12	10- 3	14	1- 8	2	9
1915	291- 5	544	0- 8	2	1- 2	4	5- 8	17	11- 7	30	29-14	69	54- 4	110	78- 4	134	29-12	48	37-12	55	27- 2	35	3
Average	**311.2**	**654**	**4.0**	**16**	**8.7**	**28**	**16.9**	**49**	**32.5**	**82**	**52.4**	**118**	**62.7**	**124**	**36.7**	**65**	**36.8**	**61**	**28.2**	**42**	**6.9**	**22**	6
1. Washington strain:																							
Orchard grade—																							
1910	191- 4	438	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	301-11	488	0- 3	1	0- 5	1	3- 8	9	14-13	33	26-10	53	70- 5	125	10- 8	18	65- 5	102	59- 0	83	51- 2	63	....
1912	357- 7	738	2- 7	9	11-11	36	18- 4	51	56- 3	139	54- 2	118	99-14	197	18- 3	33	63- 2	106	27- 9	41	6- 0	8	....
1913	151- 0	283	0- 8	2	0-14	3	10- 1	27	10-14	26	21-12	47	30- 5	58	38- 3	65	15-10	24	14- 2	20	8-11	11	....
1914	233- 3	455	0- 8	2	1-14	6	7- 2	20	21-12	53	71- 9	151	70-11	130	42- 7	69	11-12	17	3-14	5	1-10	2	....
1915	243-11	460	0- 0	0	0- 5	1	2- 6	7	14- 3	36	36-14	85	62- 6	124	65- 6	114	34-13	55	15- 0	22	12- 6	16	....
Average	**246.4**	**477**	**0.7**	**3**	**3.0**	**9**	**8.3**	**23**	**23.6**	**57**	**42.2**	**91**	**66.7**	**127**	**34.9**	**60**	**38.1**	**61**	**23.9**	**34**	**16.0**	**20**	....
Standard grade—																							
1910	16-12	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	18-12	38	0- 9	3	0-10	2	0-11	2	2- 4	5	2-14	6	7- 3	13	0-11	1	3-14	6	0- 0	0	0- 0	0	....
1912	31-13	81	4- 0	17	1-13	6	4-13	13	8-14	21	4- 3	9	5- 3	10	0- 9	1	2- 6	4	0- 0	0	0- 0	0	....
1913	29-11	65	0-12	3	1- 8	5	3-14	11	4- 2	10	4- 8	10	9- 2	17	3- 0	5	0-10	1	0-11	1	1- 8	2	....
1914	31- 4	79	3- 6	17	0-15	3	6-12	18	2-15	7	7-12	17	4-11	9	3- 9	6	1- 4	2	0- 0	0	0- 0	0	....
1915	75- 1	161	0- 3	1	0- 9	2	8-12	25	5- 8	14	15- 3	35	26- 1	53	9- 4	16	6-12	11	2- 1	3	0-12	1	....
Average	**33.9**	**77**	**1.8**	**8**	**1.1**	**4**	**5.0**	**14**	**4.7**	**11**	**6.9**	**15**	**10.5**	**20**	**3.4**	**6**	**3.0**	**5**	**0.6**	**1**	**0.5**	**1**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	14-12	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	15- 5	59	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	35-11	77	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	21-12	65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	23- 8	65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**18.5**	**49**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	208- 0	478	3- 7	14	7-11	27	14- 5	44	29- 0	78	50-10	120	39-15	83	34- 8	65	19- 9	33	7-11	12	1- 4	2	0
1911	335- 3	554	0-12	4	0-15	3	4- 3	11	17- 1	38	29- 8	59	77- 8	138	11- 3	19	69- 3	108	59- 0	83	51- 2	63	....
1912	404- 9	878	6- 7	26	13- 8	42	23- 1	64	65- 1	160	58- 5	127	105- 1	207	18-12	34	65- 8	110	27- 9	41	6- 0	8	1
1913	216- 6	425	1- 4	5	2- 6	8	13-15	38	15- 0	36	26- 4	57	39- 7	75	41- 3	70	16- 4	25	14-13	21	10- 3	13	1
1914	286- 3	599	3-14	19	2-13	9	13-14	38	24-11	60	79- 5	168	75- 6	139	46- 0	75	13- 0	19	3-14	5	1-10	2	10
1915	342- 4	686	0- 3	1	0-14	3	11- 2	32	19-11	50	52- 1	120	88- 7	177	74-10	130	41- 9	66	17- 1	25	13- 2	17	0
Average	**298.8**	**603**	**2.8**	**12**	**4.7**	**15**	**13.4**	**39**	**28.4**	**70**	**49.3**	**108**	**70.9**	**136**	**37.7**	**65**	**37.5**	**60**	**21.7**	**31**	**13.9**	**18**	3

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
14. Washington strain:																							
Orchard grade—																							
1910	170– 8	450																					....
1911	288–15	547	1– 4	5	1– 4	4	2– 8	7	20– 3	50	27– 2	60	83– 8	177	15– 1	28	84–14	145	44–15	67	3– 4	4	....
1912	226– 9	579	12– 9	50	25– 5	84	19–10	59	54– 0	145	43– 4	103	44– 8	94	7– 9	13	13–14	25	5–14	6	0– 0	0	....
1913	220– 6	656	25– 6	109	40–14	142	70– 4	209	36– 6	95	24–11	57	13–12	28	7–12	14	1– 5	2	0– 0	0	0– 0	0	....
1914	283–14	721	4–12	19	24– 4	85	48– 0	144	57–12	153	80– 6	188	47–10	96	17– 3	30	3– 4	5	0–11	1	0– 0	0	....
1915	264–15	678	0–11	3	10– 6	39	38– 6	121	48– 8	136	77–14	193	49– 8	110	32–12	64	6– 4	11	0–10	1	0– 0	0	....
Average	**242.5**	**605**	**8.9**	**37**	**20.4**	**70**	**35.8**	**108**	**43.4**	**116**	**50.7**	**120**	**48.8**	**101**	**16.1**	**30**	**21.9**	**38**	**10.4**	**15**	**0.7**	**0.8**	....
Standard grade—																							
1910	15– 0	46																					....
1911	20– 5	45	0– 6	2	0– 0	0	1–14	5	4– 8	11	5– 1	11	6– 2	12	0–10	1	1–12	3	0– 0	0	0– 0	0	....
1912	40– 7	120	8– 3	34	5–15	20	6–12	20	9– 6	24	5– 6	13	2– 8	5	1–11	3	0–10	1	0– 0	0	0– 0	0	....
1913	10– 7	37	3– 7	17	3– 6	11	1–11	5	0– 7	1	0–15	2	0– 9	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1914	28– 4	81	3– 4	16	3– 8	12	8– 4	24	2–10	7	4–14	11	2–15	6	2–13	5	0– 0	0	0– 0	0	0– 0	0	....
1915	41– 3	123	3– 2	15	4– 5	16	9–14	32	7– 8	21	8–14	23	6– 4	14	0– 8	1	0– 0	0	0– 0	0	0–12	1	....
Average	**25.9**	**75**	**3.7**	**17**	**3.4**	**12**	**5.7**	**17**	**4.9**	**13**	**5.0**	**12**	**3.7**	**7**	**1.1**	**2**	**0.5**	**1**	**0**	**0**	**0.2**	**0.2**	....
Cull fruits—																							
1910	0– 0	0																					....
1911	9– 2	18																					....
1912	34– 8	129																					....
1913	38– 3	139																					....
1914	4– 0	23																					....
1915	38– 2	120																					....
Average	**20.6**	**72**																					....

Total crop—																							
1910	185- 8	496	15- 2	60	27- 1	83	36- 2	113	46- 2	117	31- 9	68	20-15	41	4- 4	7	3- 9	6	0-12	1	0- 0	0	....
1911	318- 6	610	1-10	7	1- 4	4	4- 6	12	24-11	61	32- 3	71	94-10	189	15-11	29	86-10	148	44-15	67	3- 4	4	....
1912	301- 8	828	20-12	84	31- 4	104	26- 6	79	63- 6	169	48-10	116	47- 0	99	9- 4	16	14- 8	26	5-14	6	0- 0	0	2
1913	269- 0	832	28-13	126	44- 4	153	71-15	214	36-13	96	25-10	59	14- 5	29	7-12	14	1- 5	2	0- 0	0	0- 0	0	0
1914	316- 2	825	8- 0	35	27-12	97	56- 4	168	60- 6	160	85- 4	199	50- 9	102	20- 0	35	3- 4	5	0-11	1	0- 0	0	6
1915	344- 4	921	3-13	18	14-11	55	48- 4	153	56- 0	157	86-12	216	55-12	124	33- 4	65	6- 4	11	0-10	1	0-12	1	6
Average	**289.1**	**752**	**13.0**	**55**	**24.4**	**83**	**40.6**	**123**	**47.9**	**126**	**51.7**	**121**	**47.2**	**97**	**15.0**	**28**	**19.2**	**33**	**8.8**	**13**	**0.7**	**1**	**4**
19. Washington strain:																							
Orchard grade—																							
1910	275- 7	541	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	244- 7	367	0- 0	0	0-10	2	0- 0	0	3-12	9	6-10	14	30- 2	58	7-11	13	62- 5	98	69- 8	98	63-13	75	....
1912	214- 6	386	0- 0	0	2-10	8	4- 6	12	12- 6	30	16-14	37	48-13	95	20- 1	36	46- 9	77	45-15	69	16-12	22	....
1913	80- 8	229	2-11	13	6- 4	24	16- 8	56	11-10	35	20- 4	53	14- 9	32	6- 3	12	1-13	3	0-10	1	0- 0	0	....
1914	359- 0	656	0- 4	1	1- 2	4	9- 6	25	18-12	47	76- 3	163	88- 6	164	94- 8	154	38-10	57	19- 2	26	12-11	15	....
1915	232-13	455	0- 0	0	0- 4	1	6-12	20	15- 8	40	40- 3	92	51- 7	106	68-10	122	27- 7	43	17-14	26	4-12	6	....
Average	**234.4**	**439**	**0.6**	**3**	**2.2**	**8**	**7.4**	**23**	**12.4**	**32**	**32.0**	**72**	**46.7**	**91**	**35.8**	**67**	**35.4**	**56**	**30.6**	**44**	**19.6**	**24**	....
Standard grade—																							
1910	8- 2	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	14-12	27	0- 0	0	0- 5	1	1- 2	3	0-14	2	2- 7	5	3-14	7	0- 0	0	3- 6	5	2-12	4	0- 0	0	....
1912	12- 5	30	1- 2	4	1-11	5	1-13	5	1-10	4	2-10	6	0- 8	1	0- 9	1	2- 6	4	0- 0	0	0- 0	0	....
1913	87-12	266	7- 0	35	10- 3	40	17- 0	58	7-14	24	16-15	45	21- 0	48	5- 2	11	2-10	5	0- 0	0	0- 0	0	....
1914	34- 5	71	0- 3	1	0- 0	0	3- 3	9	2- 0	5	9-15	22	10- 2	20	4-12	8	2-10	4	0-11	1	0-13	1	....
1915	32-10	66	0- 3	1	1- 1	4	2- 2	6	0-12	2	5- 1	12	8- 3	17	5- 0	9	3-10	6	5- 2	7	1- 8	2	....
Average	**31.6**	**80**	**1.7**	**8**	**2.7**	**10**	**5.1**	**16**	**2.6**	**7**	**7.4**	**18**	**8.7**	**19**	**3.1**	**6**	**2.9**	**5**	**1.7**	**2**	**0.5**	**0.6**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	14-10	25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	6- 3	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	49-12	184	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	9-12	26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	6- 4	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**14.4**	**45**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	283- 9	560	3- 1	13	10- 0	32	9- 5	27	37-10	90	43-12	94	76-12	143	24-13	43	48- 2	77	30- 2	41	0- 0	0	....
1911	273-13	419	0- 0	0	0-15	3	1- 2	3	4-10	11	9- 1	19	34- 0	65	7-11	13	65-11	103	72- 4	102	63-13	75	....
1912	232-14	435	1- 2	4	4- 5	13	6- 3	17	14- 0	34	19- 8	43	49- 5	96	20-10	37	48-15	81	45-15	69	16- 2	22	2
1913	218- 0	679	9-11	48	16- 7	64	33- 8	114	19- 8	59	37- 3	98	35- 9	80	11- 5	23	4- 7	8	0-10	1	0- 0	0	1
1914	402-17	753	0- 7	2	1- 2	4	12- 9	34	20-12	52	86- 2	185	98- 8	184	99- 4	162	41- 4	61	19-13	27	13- 8	16	11
1915	271-11	540	0- 3	1	1- 5	5	8-14	26	16- 4	42	45- 4	104	59-10	122	73-10	131	31- 1	49	23- 0	33	6- 4	8	5
Average	**280.5**	**564**	**2.4**	**11**	**5.7**	**20**	**11.9**	**37**	**18.8**	**48**	**40.2**	**91**	**58.9**	**115**	**39.5**	**68**	**39.9**	**63**	**32.0**	**46**	**16.7**	**20**	**5**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
26. Washington strain:																							
Orchard grade—																							
1910	224– 4	481	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	309–14	496	0–10	3	0–10	2	1–10	4	10–12	26	16–13	35	36–12	70	14– 7	25	71–12	117	96– 8	140	60– 0	74	....
1912	262–11	561	2–12	11	4– 1	13	8– 7	24	35– 5	92	43–12	102	79–14	165	16– 8	32	51– 5	90	14– 7	23	6– 4	9	....
1913	134–12	280	1–10	6	3–14	12	12– 3	35	11– 6	28	32–13	72	29–13	57	31– 6	53	5–15	9	2–11	4	3– 1	4	....
1914	228– 8	502	0–10	3	5– 2	17	26– 8	72	38– 2	97	74– 6	162	47–14	91	31–10	54	2– 0	3	2– 4	3	0– 0	0	....
1915	202– 1	395	0– 0	0	1– 2	4	4–11	14	9– 7	25	32–14	78	38– 6	80	50–13	93	36– 6	60	22– 6	33	6– 0	8	....
Average	**227.0**	**453**	**1.1**	**5**	**3.0**	**10**	**10.7**	**30**	**21.0**	**54**	**40.1**	**90**	**46.5**	**93**	**29.0**	**51**	**33.5**	**56**	**27.7**	**41**	**15.1**	**19**	....
Standard grade—																							
1910	6–13	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	21– 5	45	0– 9	3	0–15	3	0–12	2	3– 6	8	3– 7	7	5–14	11	2–12	5	3–10	6	0– 0	0	0– 0	0	....
1912	36– 1	96	3– 0	13	5– 1	16	3– 1	9	10– 3	26	6– 9	15	6–13	14	0– 0	0	1– 6	3	0– 0	0	0– 0	0	....
1913	21– 0	49	1– 8	6	0– 9	2	4–10	13	0–13	2	3– 1	7	6– 3	12	2– 4	4	2– 0	3	0– 0	0	0– 0	0	....
1914	26– 3	67	1– 8	8	0–15	3	7– 3	20	5–14	14	3–15	9	4– 0	8	2– 2	4	0– 0	0	0–10	1	0– 0	0	....
1915	37–10	82	0–11	4	1– 0	3	3– 6	10	2– 2	6	6– 5	15	10– 0	21	4– 8	8	7– 8	12	0–10	1	1– 8	2	....
Average	**24.8**	**59**	**1.5**	**7**	**1.7**	**5**	**3.8**	**11**	**4.5**	**11**	**4.7**	**11**	**6.6**	**13**	**2.3**	**4**	**2.9**	**5**	**0.3**	**0.4**	**0.3**	**0.4**	....
Cull fruits—																							
1910	0– 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	10– 0	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	14– 0	61	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	41–13	113	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	7–10	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	29– 4	68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**17.1**	**49**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																						
1910	231- 1	498	3-13	16	14- 7	45	13- 0	37	46- 9	114	38-15	85	55-12	106	21- 0	36	27- 2	44	9- 9	14	0-14	1	....
1911	341- 3	559	1- 3	6	1- 9	5	2- 6	6	14- 2	34	20- 4	42	42-10	81	17- 3	30	75- 6	123	96- 8	140	60- 0	74	....
1912	312-12	718	5-12	24	9- 2	29	11- 8	33	45- 8	118	50- 5	117	86-11	179	16- 8	32	52-11	93	14- 7	23	6- 4	9	5
1913	197- 9	442	3- 2	12	4- 7	14	16-13	48	12- 3	30	35-14	79	36- 0	69	33-10	57	7-15	12	2-11	4	3- 1	4	4
1914	262- 5	602	2- 2	11	6- 1	20	33-11	92	44- 0	111	78- 5	171	51-14	99	33-12	58	2- 0	3	2-14	4	0- 0	0	1
1915	268-15	545	0-11	4	2- 2	7	8- 1	24	11- 9	31	39- 3	93	48- 6	101	55- 5	101	43-14	72	23- 0	34	7- 8	10	4
Average	**269.0**	**561**	**2.8**	**12**	**6.3**	**20**	**14.2**	**40**	**29.0**	**73**	**43.8**	**98**	**53.6**	**106**	**29.6**	**52**	**34.8**	**58**	**24.8**	**37**	**12.9**	**16**	**4**
31. Washington strain:																						
Orchard grade—																						
1910	170- 0	381	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	266- 5	421	0- 0	0	0- 5	1	1- 6	3	4-15	11	8-12	19	38-14	74	10- 9	19	84-12	135	84-14	120	31-14	39	....
1912	257- 0	566	3-13	16	12- 3	40	14- 8	42	37-15	97	38-14	89	77-13	159	12- 6	23	43-10	76	12- 4	19	3-10	5	....
1913	173- 1	357	2- 8	10	6- 5	20	15- 1	42	18- 2	45	34-15	76	29-13	57	39-10	68	13-12	21	7-10	11	5- 5	7	....
1914	246- 6	569	3- 0	13	16- 8	54	35- 4	100	49-14	123	69-10	150	47- 0	88	21- 5	35	3- 3	5	0-10	1	0- 0	0	....
1915	250- 3	560	0- 7	2	3- 6	12	17- 8	53	34- 8	93	56-15	136	63- 0	132	49- 6	92	16- 5	27	6-10	10	2- 2	3	....
Average	**227.2**	**476**	**2.0**	**8**	**7.7**	**25**	**16.7**	**48**	**29.1**	**74**	**41.8**	**94**	**51.3**	**102**	**26.7**	**47**	**32.3**	**53**	**22.4**	**32**	**8.6**	**11**	....
Standard grade—																						
1910	14-14	41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	15- 7	32	0- 4	2	0-10	2	0-15	3	1- 5	3	2- 6	5	3- 3	6	1- 2	2	5-10	9	0- 0	0	0- 0	0	....
1912	24- 4	61	2- 3	9	2-12	9	2- 2	6	4-11	12	5- 2	11	3-15	8	0- 0	0	3- 7	6	0- 0	0	0- 0	0	....
1913	20- 2	51	1- 4	5	6- 0	19	1- 5	4	2-10	7	2- 4	5	1- 8	3	2- 5	4	1- 5	2	0-11	1	0-14	1	....
1914	10- 5	35	2-11	14	1- 8	5	3- 3	9	1- 2	3	0- 7	1	1- 6	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	38- 5	96	1- 6	8	2-10	9	4-12	14	4- 0	11	10- 4	25	8- 2	17	3- 5	6	1-12	3	2- 2	3	0- 0	0	....
Average	**20.5**	**53**	**1.6**	**8**	**2.7**	**9**	**2.5**	**7**	**2.8**	**7**	**4.1**	**9**	**3.6**	**7**	**1.4**	**2**	**2.4**	**4**	**0.6**	**1**	**0.2**	**0.2**	....
Cull fruits—																						
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	7- 4	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	8- 8	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	34- 2	94	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	7- 1	34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	24- 9	65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**13.6**	**39**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1910	184-14	422	5-15	24	13- 8	43	18- 5	51	35-10	87	37- 9	82	48-12	94	7- 4	12	17- 4	28	0-11	1	0- 0	0	....
1911	289- 0	466	0- 4	2	0-15	3	2- 5	6	6- 4	14	11- 2	24	42- 1	80	11-11	21	90- 6	144	84-14	120	31-14	39	....
1912	289-12	658	6- 0	25	14-15	49	16-10	48	42-10	109	44- 0	100	81-12	167	12- 6	23	47- 1	82	12- 4	19	3-10	5	3
1913	227- 5	502	3-12	15	12- 5	39	16- 6	46	20-12	52	37- 3	81	31- 5	60	41-15	72	15- 1	23	8- 5	12	6- 3	8	0
1914	263-12	638	5-11	27	18- 0	59	38- 7	109	51- 0	126	70- 1	151	48- 6	91	21- 5	35	3- 3	5	0-10	1	0- 0	0	2
1915	313- 1	721	1-13	10	6- 0	21	22- 4	67	38- 8	104	67- 3	161	71- 2	149	52-11	98	18- 1	30	8-12	13	2- 2	3	3
Average	**261.3**	**568**	**3.9**	**17**	**11.0**	**36**	**19.0**	**54**	**32.5**	**82**	**44.5**	**100**	**53.9**	**107**	**24.5**	**44**	**31.8**	**52**	**19.3**	**28**	**7.3**	**9**	**2**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
38. Washington strain:																							
Orchard grade—																							
1910	144– 9	320	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	224– 4	369	0– 8	3	1– 4	4	1– 8	4	9– 4	22	13– 1	28	36–15	70	8–10	16	58–11	95	52– 0	75	42– 7	52	....
1912	200– 1	461	4–15	19	12– 3	39	12–13	37	37– 8	97	33– 7	78	53–10	111	12–15	25	23–12	42	3–12	6	5– 2	7	....
1913	221– 2	596	12–10	54	24– 4	86	47–15	142	47– 4	124	47–12	109	23–14	49	16–12	31	0–11	1	0– 0	0	0– 0	0	....
1914	232– 0	505	0–10	3	4–14	16	21–14	63	34– 4	87	75– 6	168	48– 3	93	30– 4	51	13– 8	20	0–11	1	2– 6	3	....
1915	213–10	459	0– 3	1	1– 6	5	12–10	39	23–14	64	45– 2	108	43– 1	91	48–12	91	20– 2	33	11–12	18	6–12	9	....
Average	**205.9**	**452**	**3.8**	**16**	**8.8**	**30**	**19.4**	**57**	**30.4**	**79**	**43.0**	**98**	**41.1**	**83**	**23.5**	**43**	**23.4**	**38**	**13.6**	**20**	**11.3**	**14**	....
Standard grade—																							
1910	9– 5	25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	17– 9	34	0– 4	1	0– 5	1	1– 3	3	2– 5	5	3–14	8	5–10	10	0– 0	0	4– 0	6	0– 0	0	0– 0	0	....
1912	43–11	122	6–14	28	6–15	22	6– 2	18	9– 6	24	6– 9	15	5– 8	11	0–10	1	1–11	3	0– 0	0	0– 0	0	....
1913	15– 3	49	3– 9	17	2–14	9	4– 2	12	1– 8	4	2–10	6	0– 8	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1914	8– 7	26	2– 1	11	0– 9	2	0–12	2	0–13	2	2– 3	5	1– 8	3	0– 9	1	0– 0	0	0– 0	0	0– 0	0	....
1915	38– 0	92	1–10	9	1– 6	5	2–14	9	2– 7	7	7– 6	18	13– 0	28	4– 4	8	3– 0	5	1– 4	2	0–13	1	....
Average	**22.0**	**58**	**2.9**	**13**	**2.4**	**8**	**3.0**	**9**	**3.3**	**8**	**4.5**	**10**	**5.2**	**11**	**1.1**	**2**	**1.7**	**3**	**0.3**	**0.4**	**0.2**	**0.2**	....
Cull fruits—																							
1910	0– 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	6– 9	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	44–13	140	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	39– 6	133	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	10– 9	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	27– 0	68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**21.4**	**66**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																						
1910	153-14	345	3- 5	14	11-14	39	12- 8	36	28-11	71	25- 9	56	45- 8	86	9- 2	15	14-13	24	2- 0	3	0- 8	1	....
1911	248- 6	416	0-12	4	1- 9	5	2-11	7	11- 9	27	16-15	36	42- 9	80	8-10	16	62-11	101	52- 0	75	42- 7	52	....
1912	288- 9	723	11-13	47	19- 2	61	18-15	55	46-14	121	40- 0	93	59- 2	122	13- 9	26	25- 7	45	3-12	6	5- 2	7	2
1913	275-11	778	16- 3	71	27- 2	95	52- 1	154	48-12	128	50- 6	115	24- 6	50	16-12	31	0-11	1	0- 0	0	0- 0	0	0
1914	251- 0	571	2-11	14	5- 7	18	22-10	65	35- 1	89	77- 9	173	49-11	96	30-13	52	13- 8	20	0-11	1	2- 6	3	0
1915	278-10	619	1-13	10	2-12	10	15- 8	48	26- 5	71	52- 8	126	56- 1	119	53- 0	99	23- 2	38	13- 0	20	7- 9	10	10
Average	**249.3**	**575**	**6.1**	**27**	**11.3**	**38**	**20.7**	**61**	**32.9**	**85**	**43.8**	**100**	**46.2**	**92**	**22.0**	**40**	**23.4**	**38**	**11.9**	**17**	**9.6**	**12**	**3**
49. Washington strain:																						
Orchard grade—																						
1910	180-10	404	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	247- 6	389	0- 3	1	0- 0	0	0- 6	1	3- 5	8	8- 2	17	38- 0	71	15- 1	26	75- 6	121	56- 0	82	50-15	62	....
1912	245-11	570	7- 1	27	15- 2	48	18- 5	53	47-14	123	44-10	102	68- 0	140	7- 6	14	26-11	47	4-15	8	5-11	8	....
1913	209-14	396	1-13	7	2-13	9	10- 5	28	18- 2	44	30-15	67	38- 9	74	53- 0	89	32- 4	49	9- 5	13	12-12	16	....
1914	204-14	544	5- 5	21	30-15	102	45- 8	130	54-14	143	50- 7	114	14- 8	28	3- 5	6	0- 0	0	0- 0	0	0- 0	0	....
1915	136- 0	249	0- 0	0	0- 5	1	2- 0	6	5- 0	13	14-10	35	22- 2	46	32- 2	58	27- 2	44	22- 5	33	10- 6	13	....
Average	**204.1**	**425**	**2.9**	**11**	**9.8**	**32**	**15.3**	**44**	**25.8**	**66**	**29.8**	**67**	**36.2**	**72**	**22.2**	**39**	**32.3**	**52**	**18.5**	**27**	**16.0**	**20**	....
Standard grade—																						
1910	20-12	50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	9- 3	17	0- 4	1	0- 0	0	0-12	2	0-14	2	0- 0	0	2-14	5	0- 9	1	3-14	6	0- 0	0	0- 0	0	....
1912	22- 2	63	3- 9	15	2- 3	7	4-13	14	4-11	12	3-13	9	1- 6	3	0- 8	1	1- 3	2	0- 0	0	0- 0	0	....
1913	20- 5	50	0- 9	2	2- 8	8	5- 3	15	2-11	7	3- 2	7	3-10	7	0-10	1	0-11	1	1- 5	2	0- 0	0	....
1914	13- 3	43	2-12	14	2-12	9	4-10	13	2- 9	6	0- 0	0	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	49- 0	105	0- 0	0	1-12	7	2- 8	8	2-15	8	9- 8	23	13- 3	28	8- 8	15	4-14	8	4-15	7	0-13	1	....
Average	**22.4**	**55**	**1.4**	**6**	**1.8**	**6**	**3.6**	**10**	**2.8**	**7**	**3.3**	**8**	**4.3**	**9**	**2.0**	**4**	**2.1**	**3**	**1.3**	**2**	**0.2**	**0.2**	....
Cull fruits—																						
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	5- 2	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	17-12	57	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	36- 8	86	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	5- 3	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	18- 6	43	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**13.8**	**35**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1910	201- 6	454	6- 6	23	15- 7	48	19- 9	53	45- 6	110	36- 5	79	49-13	94	13- 3	23	13- 3	21	0-10	1	1- 8	2	....
1911	261-11	413	0- 7	2	0- 0	0	1- 2	3	4- 3	10	8- 2	17	40-14	76	15-10	27	79- 4	127	56- 0	82	50-15	62	....
1912	285- 9	690	10-10	42	17- 5	55	23- 2	67	52- 9	135	48- 7	111	69- 6	143	7-14	15	27-14	49	4-15	8	5-11	8	2
1913	266-11	532	2- 6	9	5- 5	17	15- 8	43	20-13	51	34- 1	74	42- 3	81	53-10	90	32-15	50	10-10	15	12-12	16	0
1914	223- 4	607	8- 1	35	33-11	111	50- 2	143	57- 7	149	50- 7	114	15- 0	29	3- 5	6	0- 0	0	0- 0	0	0- 0	0	2
1915	203- 6	397	0- 0	0	2- 1	8	4- 8	14	7-15	21	24- 2	58	35- 5	74	40-10	73	32- 0	52	27- 4	40	11- 3	14	17
Average	**240.3**	**515**	**4.6**	**17**	**12.3**	**40**	**19.0**	**54**	**31.4**	**80**	**33.6**	**76**	**42.1**	**83**	**22.4**	**39**	**30.9**	**50**	**16.5**	**24**	**13.7**	**17**	**5**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
58. Washington strain:																							
Orchard grade—																							
1910	255- 2	489	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	218- 3	333	0- 0	0	0- 5	1	0-12	2	3- 5	8	10-12	23	23- 7	44	6- 2	11	62- 6	100	52-14	75	58- 4	69	....
1912	173- 2	337	0- 9	2	3-11	12	5- 9	16	16- 8	42	16- 1	37	43- 5	87	9-13	18	42- 7	72	26- 1	39	9- 2	12	....
1913	51-11	134	0-13	4	0-11	3	6- 1	22	5-13	18	12-13	35	8- 1	19	9- 3	19	3- 7	6	2- 8	4	2- 5	4	....
1914	257- 9	509	0-14	4	2- 0	7	8- 7	24	21-10	54	64-14	144	63-13	123	59- 4	101	26- 8	39	5- 5	7	4-14	6	....
1915	178- 5	306	0- 0	0	0- 0	0	0- 5	1	2-12	7	17- 8	39	24-11	49	55-15	98	31- 1	49	27-11	40	18- 6	23	....
Average	**189.0**	**351**	**0.5**	**2**	**1.3**	**5**	**4.2**	**13**	**10.0**	**26**	**24.4**	**56**	**32.7**	**64**	**28.1**	**49**	**33.2**	**53**	**22.9**	**33**	**18.6**	**23**	....
Standard grade—																							
1910	3- 2	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	30-10	50	0- 0	0	0- 0	0	0- 6	1	1-10	4	1-14	4	4- 4	8	1- 0	2	14- 4	21	7- 4	10	0- 0	0	....
1912	18- 2	42	2- 5	9	0-11	2	0-12	2	2-13	7	2-12	6	4-10	9	1- 2	2	3- 1	5	0- 0	0	0- 0	0	....
1913	53- 4	156	2-13	15	3- 8	16	6- 1	23	5- 6	17	8-15	26	13- 1	33	7- 2	15	3- 2	6	3- 4	5	0- 0	0	....
1914	35- 3	77	0- 2	1	0- 0	0	5- 6	15	4- 2	10	7- 9	17	11-12	24	2- 4	4	3- 4	5	0-12	1	0- 0	0	....
1915	26- 4	48	0- 0	0	0- 0	0	0- 5	1	0-12	2	3- 0	7	8- 2	16	5-10	10	2- 8	4	2-12	4	3- 3	4	....
Average	**27.8**	**63**	**1.1**	**5**	**0.8**	**4**	**2.6**	**8**	**2.9**	**8**	**4.8**	**12**	**8.4**	**18**	**3.4**	**7**	**5.2**	**8**	**2.8**	**4**	**0.6**	**0.8**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	18-11	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	6-10	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	37-12	140	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	6-14	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	8- 1	21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**13.0**	**38**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																							
1910	258– 4	496	1– 7	6	7– 1	22	6–14	19	32– 3	78	39– 5	85	66– 8	125	19– 4	33	52– 3	83	22–12	32	10–11	13	....
1911	267– 8	416	0– 0	0	0– 5	1	1– 2	3	4–15	12	12–10	27	27–11	52	7– 2	13	76–10	121	60– 2	85	58– 4	69	....
1912	197–14	395	2–14	11	4– 6	14	6– 5	18	19– 5	49	18–13	43	47–15	96	10–15	20	45– 8	77	26– 1	39	9– 2	12	10
1913	142–11	430	3–10	19	4– 3	19	12– 2	45	11– 3	35	21–12	61	21– 2	52	16– 5	34	6– 9	12	5–12	9	2– 5	4	6
1914	299–10	603	1– 0	5	2– 0	7	13–13	39	25–12	64	72– 7	161	75– 9	147	61– 8	105	29–12	44	6– 1	8	4–14	6	16
1915	212–10	375	0– 0	0	0– 0	0	0–10	2	3– 8	9	20– 8	46	32–13	65	61– 9	108	33– 9	53	30– 7	44	21– 9	27	11
Average	**229.8**	**452**	**1.5**	**7**	**3.0**	**11**	**6.8**	**21**	**16.1**	**41**	**30.9**	**70**	**45.3**	**89**	**29.5**	**52**	**40.7**	**65**	**25.2**	**36**	**17.8**	**22**	**11**
67. Washington strain:																							
Orchard grade—																							
1910	161–11	339	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	256– 4	394	0–12	4	0– 5	1	1– 8	4	7– 9	17	17– 6	35	40–12	73	9– 2	16	56– 0	87	64– 8	91	58– 6	66	....
1912	245– 4	499	1– 6	5	10–14	34	10– 0	28	26– 2	66	34–13	78	70– 2	138	13–10	25	44–15	77	30– 4	44	3– 2	4	....
1913	121–14	246	1– 8	6	3– 1	10	9– 5	25	12–12	31	26–14	57	25–13	49	24– 0	41	9–12	15	7– 2	10	1–11	2	....
1914	174– 7	358	1– 4	5	3–12	12	12–10	34	29– 2	70	60–15	127	35– 4	63	23–14	37	5– 2	7	2– 8	3	0– 0	0	....
1915	144– 5	267	0– 4	1	0– 0	0	3– 1	9	8–13	23	21–10	48	23–14	48	45– 4	79	18–13	29	12–14	18	9–12	12	....
Average	**184.0**	**351**	**1.0**	**4**	**3.6**	**11**	**7.3**	**20**	**16.9**	**41**	**32.3**	**69**	**39.2**	**74**	**23.2**	**40**	**26.9**	**43**	**23.5**	**33**	**14.6**	**17**	....
Standard grade—																							
1910	15–11	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	14–15	27	0– 0	0	0– 0	0	0–12	2	0–14	2	3– 7	7	2–11	5	0– 0	0	7– 3	11	0– 0	0	0– 0	0	....
1912	21– 2	54	3– 2	12	0–10	2	3–10	10	4– 8	11	3–14	9	3–10	7	0– 0	0	1–12	3	0– 0	0	0– 0	0	....
1913	21–13	48	0– 4	1	1–10	5	4–15	14	2– 8	6	4– 4	9	1– 9	3	1–11	3	1–14	3	1– 7	2	1–11	2	....
1914	33– 0	76	1–14	10	2– 2	7	3–15	10	5–14	14	4–10	10	6– 6	12	4–12	8	2–12	4	0–11	1	0– 0	0	....
1915	34–13	71	1– 2	5	0– 9	2	2– 0	6	1– 8	4	3– 2	7	10–14	22	7– 6	13	5– 2	8	0–10	1	2– 8	3	....
Average	**23.6**	**52**	**1.3**	**6**	**1.0**	**3**	**3.1**	**8**	**3.1**	**7**	**3.9**	**8**	**5.0**	**10**	**2.8**	**5**	**3.7**	**6**	**0.6**	**1.0**	**0.8**	**1**	....
Cull fruits—																							
1910	0– 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	5– 4	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	19– 1	55	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	35–15	81	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	2– 0	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	17– 0	39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**13.2**	**33**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	177– 6	372	3–15	13	9–11	31	9– 2	25	30– 5	73	22–12	69	55–10	104	11– 8	19	19– 8	31	4– 1	6	0–14	1	....
1911	276– 7	430	0–12	4	0– 5	1	2– 4	6	8– 7	19	20–13	42	43– 7	78	9– 2	16	63– 3	98	64– 8	91	58– 6	66	....
1912	285– 7	608	4– 8	17	11– 8	36	13–10	38	30–10	77	38–11	87	73–12	145	13–10	25	46–11	80	30– 4	44	3– 2	4	2
1913	179–10	375	1–12	7	4–11	15	14– 4	39	15– 4	37	31– 2	66	27– 6	52	25–11	44	11–10	18	8– 9	12	3– 6	4	1
1914	209– 7	447	3– 2	15	5–14	19	16– 9	44	35– 0	84	65– 9	137	41–10	75	28–10	45	7–14	11	3– 3	4	0– 0	0	11
1915	196– 2	377	1– 6	6	0– 9	2	5– 1	15	10– 5	27	24–12	55	34–12	70	52–10	92	23–15	37	13– 8	19	12– 4	15	8
Average	**220.7**	**435**	**2.6**	**10**	**5.4**	**17**	**10.1**	**28**	**21.6**	**53**	**35.6**	**76**	**46.1**	**88**	**23.6**	**40**	**28.9**	**46**	**20.7**	**29**	**13.0**	**15**	**6**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
78. Washington strain:																							
Orchard grade—																							
1910	133– 8	285																					
1911	176–13	290	0– 3	1	0–10	2	2– 6	6	10– 9	24	9– 3	19	38– 2	69	7–14	12	49–10	79	31–10	45	26–10	33	
1912	185– 1	418	5– 9	21	11–10	37	16– 3	45	32–12	82	29– 4	65	52– 9	105	6–11	12	24– 3	42	6– 4	9	0– 0	0	
1913	157– 3	339	1– 4	5	9– 3	30	11–15	34	26– 3	65	37– 4	82	30– 0	58	26–11	44	5–15	9	7– 4	10	1– 8	2	
1914	209– 7	458	1–10	7	4–10	16	18–10	52	38–14	96	67– 3	143	52– 0	100	19– 0	33	5– 4	8	2– 4	3	0– 0	0	
1915	167–14	337	0– 0	0	0–14	3	3–12	11	7–14	21	31– 6	73	42– 8	90	46–12	86	17–11	29	10– 1	15	7– 0	9	
Average	**171.6**	**355**	**1.7**	**7**	**5.4**	**18**	**10.6**	**30**	**23.3**	**58**	**34.9**	**76**	**43.0**	**84**	**21.4**	**37**	**20.5**	**33**	**9.7**	**16**	**7.0**	**9**	
Standard grade—																							
1910	18– 1	38																					
1911	11– 2	21	0– 4	1	0–10	2	1– 3	3	0–14	2	1– 8	3	0– 8	1	0– 9	1	2– 1	3	3– 9	5	0– 0	0	
1912	24–13	75	6– 5	29	3–12	12	1– 5	4	4–14	12	4– 7	10	2– 8	5	0– 8	1	1– 2	2	0– 0	0	0– 0	0	
1913	21– 9	58	3–11	15	5– 0	16	2– 9	7	0–14	2	3– 8	8	0–15	2	2– 4	4	1– 4	2	0–11	1	0–13	1	
1914	27–15	75	1–10	9	3–11	12	7– 6	20	4–15	12	4– 6	10	5– 6	11	0– 9	1	0– 0	0	0– 0	0	0– 0	0	
1915	55– 4	124	0–10	3	1– 3	4	4– 4	13	6– 3	17	11– 0	26	18– 1	38	7– 4	13	2– 8	4	2–11	4	1– 8	2	
Average	**26.5**	**65**	**2.5**	**11**	**2.9**	**9**	**3.3**	**9**	**3.6**	**9**	**5.0**	**11**	**5.5**	**11**	**2.2**	**4**	**1.4**	**2**	**1.4**	**2**	**0.5**	**0.6**	
Cull fruits—																							
1910	0– 0	0																					
1911	2–12	5																					
1912	14– 1	45																					
1913	22– 1	60																					
1914	3– 7	13																					
1915	26– 0	65																					
Average	**11.4**	**31**																					

Total crop—																							
1910	151- 9	323	1- 2	5	4-12	16	6-12	20	10-13	29	31- 2	74	31- 7	65	32- 5	60	20- 6	35	6- 9	10	6- 5	9	....
1911	190-11	316	0- 7	2	1- 4	4	3- 9	9	11- 7	26	10-11	22	38-10	70	8- 7	13	51-11	82	35- 3	50	26-10	33	....
1912	223-15	538	11-14	50	15- 6	49	17- 8	49	37-10	94	33-11	75	55- 1	110	7- 3	13	25- 5	44	6- 4	9	0- 0	0	0
1913	200-13	457	4-15	20	14- 3	46	14- 8	41	27- 1	67	40-12	90	30-15	60	28-15	48	7- 3	11	7-15	11	2- 5	3	0
1914	240-13	546	3- 4	16	8- 5	28	26- 0	72	43-13	108	71- 9	153	57- 6	111	19- 9	34	5- 4	8	2- 4	3	0- 0	0	6
1915	249- 2	526	0-10	3	2- 1	7	8- 0	24	14- 1	38	42- 6	99	60- 9	128	54- 0	99	20- 3	33	12-12	19	8- 8	11	14
Average	**209.5**	**451**	**3.7**	**16**	**7.6**	**25**	**12.7**	**36**	**24.1**	**60**	**38.4**	**86**	**45.7**	**91**	**25.1**	**44**	**21.7**	**36**	**11.8**	**17**	**7.3**	**9**	**5**
88. Washington strain:																							
Orchard grade—																							
1910	116- 1	238	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	178- 3	295	0- 0	0	0-15	3	1-14	5	5- 8	13	17- 6	37	31- 8	59	9- 2	16	38- 6	62	44- 2	63	29- 6	37	....
1912	159-13	300	1-13	7	2-14	9	3- 8	10	8-11	22	16- 7	37	38-12	77	8-10	16	39-13	67	26-14	39	12- 7	16	....
1913	143-15	326	3-14	15	4- 4	15	24- 6	69	19- 9	50	35- 8	78	25- 0	48	18-10	32	6- 7	10	5- 9	8	0-12	1	....
1914	225- 0	508	2-14	13	10-14	38	28- 2	80	40- 0	100	55- 0	120	48- 2	92	31- 8	53	5- 8	8	2- 4	3	0-12	1	....
1915	168- 2	349	0- 0	0	2- 1	7	12- 0	36	18- 4	48	34- 2	79	31- 0	63	32- 1	58	18- 2	29	13- 6	20	7- 2	9	....
Average	**165.2**	**336**	**1.7**	**7**	**4.2**	**14**	**14.0**	**40**	**18.4**	**47**	**31.7**	**70**	**34.8**	**68**	**20.0**	**35**	**21.7**	**35**	**18.4**	**27**	**10.1**	**13**	....
Standard grade—																							
1910	14-12	35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	13- 9	27	0- 5	1	0- 5	1	0- 6	2	0-14	2	3-14	8	2- 3	4	2- 6	4	3- 4	5	0- 0	0	0- 0	0	....
1912	18- 7	42	2- 1	8	0-10	2	1- 8	4	3- 6	8	1-15	4	5-11	11	0- 0	0	3- 4	5	0- 0	0	0- 0	0	....
1913	21- 2	63	4- 4	20	4- 7	15	2- 7	7	1- 4	3	4-10	10	3- 7	7	0- 0	0	0- 0	0	0-11	1	0- 0	0	....
1914	37- 1	113	8- 7	46	3- 0	10	4- 6	12	4- 6	11	4- 5	10	9-11	19	1-11	3	1- 3	2	0- 0	0	0- 0	0	....
1915	41-12	99	2- 0	10	2- 4	8	4- 6	13	2- 2	6	7- 0	17	10-12	23	5- 8	10	3-10	6	2-10	4	1- 8	2	....
Average	**24.5**	**63**	**3.4**	**17**	**2.1**	**7**	**2.6**	**8**	**2.4**	**6**	**4.4**	**10**	**6.0**	**13**	**1.9**	**3**	**2.3**	**4**	**0.7**	**1**	**0.3**	**0.4**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	5-14	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	10- 2	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	21-13	60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	8- 0	45	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	23- 4	69	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**11.5**	**36**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	130-13	273	1-14	7	8- 7	27	8-13	24	23- 0	56	17- 6	37	35-12	66	11- 6	19	21- 3	33	2- 4	3	0-12	1	....
1911	197-10	332	0- 5	1	1- 4	4	2- 4	7	6- 6	15	21- 4	45	33-11	63	11- 8	20	41-10	67	44- 2	63	29- 6	37	....
1912	188- 6	375	3-14	15	3- 8	11	5- 0	14	12- 1	30	18- 6	41	44- 7	88	8-10	16	43- 1	72	26-14	39	12- 7	16	3
1913	186-14	449	8- 2	35	8-11	30	26-13	76	20-13	53	40- 2	88	28- 7	55	18-10	32	6- 7	10	6- 4	9	0-12	1	0
1914	270- 1	666	11- 5	59	13-14	48	32- 8	92	44- 6	111	59- 5	130	57-13	111	33- 3	56	6-11	10	2- 4	3	0-12	1	7
1915	233- 2	517	2- 0	10	4- 5	15	16- 6	49	20- 6	54	41- 2	96	41-12	86	37- 9	68	21-12	35	16- 0	24	8-10	11	1
Average	**201.2**	**435**	**4.6**	**21**	**6.7**	**23**	**15.3**	**44**	**21.2**	**53**	**32.9**	**73**	**40.3**	**78**	**20.1**	**35**	**23.5**	**38**	**16.3**	**23**	**8.8**	**11**	**3**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
93. Washington strain:																							
Orchard grade—																							
1910	133– 0	270	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	215– 0	360	0–15	4	0–10	2	0–13	2	6– 6	15	15– 3	32	42– 6	79	12– 2	21	64– 4	103	50–12	75	21– 9	27	....
1912	206–15	439	2– 7	9	6– 6	20	11–10	33	26– 0	66	38–14	88	54– 4	109	13–13	26	35– 7	60	10– 7	17	7–11	11	....
1913	109–10	234	1– 5	5	6– 3	20	14–14	41	9–14	24	27– 3	58	22– 0	42	15– 3	26	5– 8	8	2–14	4	4–10	6	....
1914	165–13	323	0– 7	2	2– 3	7	6– 8	18	20– 3	47	43–15	92	49–10	91	29–12	48	7– 2	10	4– 6	6	1–11	2	....
1915	128– 7	224	0– 0	0	0– 0	0	0–12	2	2–10	7	7–15	18	23–12	48	35–14	64	24– 2	39	25– 4	36	8– 2	10	....
Average	**159.8**	**308**	**1.0**	**4**	**3.1**	**10**	**6.9**	**19**	**13.0**	**32**	**26.6**	**58**	**38.4**	**74**	**21.4**	**37**	**27.3**	**44**	**18.7**	**28**	**8.7**	**11**	....
Standard grade																							
1910	17– 2	42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	9–12	21	0– 2	2	0– 0	0	1– 2	3	1–12	4	0–14	2	2– 3	4	0– 9	1	2– 7	4	0–11	1	0– 0	0	....
1912	18– 5	45	1– 6	8	1– 6	4	1–11	5	2– 6	6	2–12	6	2– 9	5	1– 2	2	5– 1	9	0– 0	0	0– 0	0	....
1913	16–14	40	1– 2	4	0–11	2	5– 1	14	2– 6	6	1–12	4	3– 2	6	0– 9	1	0– 0	0	2– 3	3	0– 0	0	....
1914	16– 4	42	1– 8	8	0–14	3	2–15	8	3– 6	8	3–12	8	2– 0	4	0– 9	1	1– 4	2	0– 0	0	0– 0	0	....
1915	27– 6	54	0– 3	1	0– 4	1	1– 4	4	0– 6	1	3– 4	8	8– 7	17	6– 6	11	3–12	6	2–12	4	0–12	1	....
Average	**17.6**	**41**	**0.9**	**5**	**0.6**	**2**	**2.4**	**7**	**2.1**	**5**	**2.5**	**6**	**3.7**	**7**	**1.8**	**3**	**2.5**	**4**	**1.1**	**2**	**0.2**	**0.2**	....
Cull fruits—																							
1910	0– 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	2– 0	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	15– 8	53	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	30– 8	84	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	3– 8	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	11–14	26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**10.6**	**30**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																						
1910	150–2	312	3–6	15	4–1	14	8–13	25	23–4	57	22–11	49	43–9	82	12–6	21	21–5	34	7–10	11	3–1	4	....
1911	226–12	385	1–1	6	0–10	2	1–15	5	8–2	19	16–1	34	44–9	83	12–11	22	66–11	107	51–7	76	21–9	27	....
1912	240–12	537	3–13	17	7–12	24	13–5	38	28–6	72	41–10	94	56–13	114	14–15	28	40–8	69	10–7	17	7–11	11	0
1913	157–0	358	2–7	9	6–14	22	19–15	55	12–4	30	28–15	62	25–2	48	15–12	27	5–8	8	5–1	7	4–10	6	1
1914	185–9	378	1–15	10	3–1	10	9–7	26	23–9	55	47–11	100	51–10	95	30–5	49	8–6	12	4–6	6	1–11	2	1
1915	167–11	304	0–3	1	0–4	1	2–0	6	3–0	8	11–3	26	32–3	65	42–4	75	27–14	45	28–0	40	8–14	11	3
Average	**188.0**	**379**	**2.1**	**10**	**3.8**	**12**	**9.2**	**26**	**16.4**	**40**	**28.0**	**61**	**42.3**	**81**	**21.4**	**37**	**28.4**	**46**	**17.8**	**26**	**7.9**	**10**	**1**
97. Washington strain: Orchard grade—																						
1910	355–3	588	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	96–11	119	0–0	0	0–5	1	0–0	0	0–7	1	0–0	0	3–11	7	1–12	3	8–7	13	36–1	47	46–0	47	....
1912	119–7	238	1–6	5	5–9	17	4–8	12	20–11	50	11–3	24	33–6	63	6–4	11	18–1	29	18–7	27	0–0	0	....
1913	26–0	49	0–4	1	0–5	1	1–4	4	0–12	2	2–11	6	3–0	6	6–7	12	4–1	7	3–6	5	3–14	5	....
1914	185–1	364	0–8	2	0–10	2	8–2	23	17–12	44	49–4	106	47–10	90	47–1	77	10–2	15	3–2	4	0–14	1	....
1915	100–9	142	0–0	0	0–0	0	0–0	0	0–6	1	2–0	4	7–0	13	19–3	32	12–0	18	27–3	37	32–13	37	....
Average	**147.1**	**250**	**0.4**	**2**	**1.4**	**4**	**3.0**	**8**	**8.0**	**20**	**13.0**	**28**	**18.9**	**36**	**16.1**	**27**	**10.5**	**16**	**17.6**	**24**	**16.7**	**18**	....
Standard grade—																						
1910	4–5	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	3–2	5	0–0	0	0–0	0	0–0	0	0–0	0	0–0	0	1–2	2	0–0	0	2–0	3	0–0	0	0–0	0	....
1912	13–5	34	2–10	10	0–10	2	1–13	5	2–8	6	0–14	2	3–12	7	0–9	1	0–9	1	0–0	0	0–0	0	....
1913	44–2	100	0–14	4	1–8	5	4–2	13	2–10	8	7–0	17	8–10	19	10–14	21	3–9	6	2–10	4	2–5	3	....
1914	44–10	99	0–6	2	1–14	6	6–0	17	5–11	14	8–12	20	12–12	25	7–1	12	0–11	1	0–11	1	0–12	1	....
1915	14–10	25	0–0	0	0–0	0	0–0	0	0–0	0	0–14	2	5–13	11	1–2	2	3–3	5	2–1	3	1–9	2	....
Average	**20.7**	**46**	**0.8**	**3**	**0.8**	**3**	**2.4**	**7**	**2.2**	**6**	**3.5**	**8**	**6.4**	**13**	**3.9**	**7**	**2.0**	**3**	**1.1**	**2**	**0.9**	**1**	....
Cull fruits—																						
1910	0–0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	14–6	21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	4–14	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	22–5	60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	2–10	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	9–0	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**8.9**	**20**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1910	359–8	598	1–5	5	6–13	21	15–9	41	48–2	111	64–5	85	77–15	144	32–10	55	82–6	96	21–15	30	8–8	10	....
1911	114–3	145	0–0	0	0–5	1	0–0	0	0–7	1	0–0	0	4–13	9	1–12	3	10–7	16	36–1	47	46–0	47	....
1912	137–10	284	4–0	15	6–3	19	6–5	17	23–3	56	12–1	26	37–2	70	6–13	12	18–10	30	18–7	27	0–0	0	0
1913	92–7	209	1–2	5	1–13	6	5–6	17	3–6	10	9–11	23	11–10	25	17–5	33	7–10	13	6–0	9	6–3	8	0
1914	232–5	472	0–14	4	2–8	8	14–2	40	23–7	58	58–0	126	60–6	115	54–2	89	10–13	16	3–13	5	1–10	2	15
1915	124–3	185	0–0	0	0–0	0	0–0	0	0–6	1	2–14	6	12–13	24	20–5	34	15–3	23	29–4	40	34–6	39	0
Average	**176.7**	**316**	**1.2**	**5**	**2.9**	**9**	**6.9**	**19**	**16.5**	**39**	**24.5**	**44**	**34.1**	**65**	**22.1**	**38**	**24.2**	**33**	**19.3**	**26**	**16.1**	**18**	**4**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
100. Washington strain:																							
Orchard grade—																							
1910	161- 2	357	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	165- 4	348	1- 0	5	5- 1	16	6- 2	17	27- 0	66	28- 1	62	49-12	100	11- 3	21	20- 6	35	15- 2	24	1- 9	2	....
1912	184- 1	491	15- 4	58	27-10	88	29- 4	83	53- 4	135	31-14	73	20- 8	42	2- 6	5	3-15	7	0- 0	0	0- 0	0	....
1913	124-12	357	9-14	42	16-15	61	37-13	112	22- 9	59	23-10	55	8-10	18	5- 5	10	0- 0	0	0- 0	0	0- 0	0	....
1914	125- 1	289	0- 4	1	5- 7	18	15- 7	43	25- 2	63	46- 4	103	23- 0	45	6-15	12	2-10	4	0- 0	0	0- 0	0	....
1915	87- 3	195	0- 4	1	0-15	3	4- 4	13	10-14	29	26- 3	63	21- 2	44	14- 8	27	6- 7	11	2-10	4	0- 0	0	....
Average	**141.2**	**340**	**5.3**	**21**	**11.2**	**37**	**18.6**	**54**	**27.8**	**70**	**31.2**	**71**	**24.6**	**50**	**8.1**	**15**	**6.7**	**11**	**3.6**	**6**	**0.3**	**0.4**	....
Standard grade—																							
1910	6- 6	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	12- 3	31	1- 0	5	1-14	6	1- 9	4	2- 8	6	1-14	4	1- 8	3	0- 0	0	1-14	3	0- 0	0	0- 0	0	....
1912	14- 0	44	2-11	12	2- 3	9	2- 1	6	3- 2	8	1-15	5	0-15	2	1- 1	2	0- 0	0	0- 0	0	0- 0	0	....
1913	30- 2	115	13- 6	65	6-15	24	5- 2	15	2- 6	6	1- 4	3	0- 8	1	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1914	29-10	84	4- 6	21	2-15	9	8- 7	23	5- 6	13	4-14	11	1-15	4	1-11	3	0- 0	0	0- 0	0	0- 0	0	....
1915	54- 0	114	0-10	3	0- 4	1	2- 4	7	1- 7	4	8- 2	20	15-15	35	9-14	19	4- 8	8	10- 4	16	0-12	1	....
Average	**24.4**	**68**	**4.4**	**21**	**2.8**	**10**	**3.9**	**11**	**3.0**	**7**	**3.6**	**9**	**4.2**	**9**	**2.6**	**5**	**1.3**	**2**	**2.1**	**3**	**0.2**	**0.2**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	3- 1	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	4-11	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	14- 8	52	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	8- 8	42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	12- 8	26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**7.2**	**24**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																						
1910	167- 8	374	1- 0	4	2-12	11	7-10	24	16- 6	45	36-14	88	35- 9	77	41-12	81	11-14	21	9- 7	16	4- 4	7	....
1911	180- 8	386	2- 0	10	6-15	22	7-11	21	29- 8	72	29-15	66	51- 4	103	11- 3	21	22- 4	38	15- 2	24	1- 9	2	....
1912	202-12	554	17-15	70	29-13	97	31- 5	89	56- 6	143	33-13	78	21- 7	44	3- 7	7	3-15	7	0- 0	0	0- 0	0	4
1913	169- 6	524	23-14	107	23-14	85	42-15	127	24-15	65	24-14	58	9- 2	19	5-14	11	0- 0	0	0- 0	0	0- 0	0	2
1914	163- 3	415	4-10	22	8- 6	27	23-14	66	30- 8	76	51- 2	114	24-15	49	8-10	15	2-10	4	0- 0	0	0- 0	0	12
1915	153-11	335	0-14	4	1- 3	4	6- 8	20	12- 5	33	34- 5	83	37- 1	79	24- 6	46	10-15	19	12-14	20	0-12	1	2
Average	**172.8**	**431**	**8.3**	**36**	**12.1**	**41**	**20.0**	**58**	**28.3**	**72**	**35.2**	**81**	**29.9**	**62**	**15.9**	**30**	**8.6**	**15**	**6.2**	**10**	**1.1**	**2**	**5**
103. Washington strain:																						
Orchard grade—																						
1910	106- 5	236	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	122- 2	270	1- 2	4	9- 2	29	10- 4	28	27- 8	63	23- 1	52	27-11	54	4-14	9	10- 8	18	8- 0	13	0- 0	0	....
1912	168- 1	498	25-10	100	45-15	146	35- 3	100	46-11	120	9- 2	21	4- 5	9	0- 9	1	0-10	1	0- 0	0	0- 0	0	....
1913	163- 7	508	19- 8	89	32- 8	119	45-10	140	28-10	76	25- 7	60	10- 3	21	1- 9	3	0- 0	0	0- 0	0	0- 0	0	....
1914	131- 0	331	1- 3	5	8-12	29	33- 0	94	32- 8	82	41- 5	93	13- 2	26	1- 2	2	0- 0	0	0- 0	0	0- 0	0	....
1915	101- 3	234	0- 0	0	1- 8	5	11- 0	33	16-12	44	28- 0	66	22-15	48	18- 1	33	2- 5	4	0-10	1	0- 0	0	....
Average	**132.0**	**346**	**9.5**	**40**	**19.6**	**66**	**27.0**	**79**	**30.4**	**77**	**25.4**	**58**	**15.7**	**32**	**5.2**	**10**	**2.7**	**5**	**1.7**	**3**	**0**	**0**	....
Standard grade—																						
1910	17- 6	47	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	25- 9	66	3- 4	13	3- 0	9	4-14	13	5- 9	13	6- 3	13	1- 8	3	0- 9	1	0-10	1	0- 0	0	0- 0	0	....
1912	15-10	66	10- 2	51	2-11	8	0- 5	1	1- 4	3	1- 4	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	23- 9	86	8- 6	42	5- 0	18	3- 5	10	2-10	7	2- 3	5	2- 1	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	28-12	81	3- 5	16	4- 8	15	5-13	16	4- 1	10	7- 9	17	3- 0	6	0- 8	1	0- 0	0	0- 0	0	0- 0	0	....
1915	22- 3	53	0-10	3	0-10	2	1-15	6	2- 8	7	1- 2	3	9-12	22	3-12	7	0- 9	1	0-10	1	0-11	1	....
Average	**22.2**	**67**	**5.1**	**25**	**3.2**	**10**	**3.3**	**9**	**3.2**	**8**	**3.7**	**8**	**3.3**	**7**	**1.0**	**2**	**0.2**	**0.4**	**0.1**	**0.2**	**0.1**	**0.2**	....
Cull fruits—																						
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	7- 8	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	6-13	35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	18- 9	77	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	5- 0	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	4-10	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**7.1**	**29**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1910	123-11	283	1- 0	4	3-13	13	8- 8	26	11-13	32	36-15	87	34- 0	71	18- 3	34	5-15	10	1-13	3	1-11	3	....
1911	155- 3	355	4- 6	17	12- 2	38	15- 2	41	33- 1	76	29- 4	65	29- 3	57	5- 7	10	11- 2	19	8- 0	13	0- 0	0	....
1912	190- 8	599	35-12	151	48-10	154	35- 8	101	47-15	123	10- 6	24	4- 5	9	0- 9	1	0-10	1	0- 0	0	0- 0	0	1
1913	205- 9	671	27-14	131	37- 8	137	48-15	150	31- 4	83	27-10	65	12- 4	25	1- 9	3	0- 0	0	0- 0	0	0- 0	0	0
1914	164-12	442	4- 8	21	13- 4	44	38-13	110	36- 9	92	48-14	110	16- 2	32	1-10	3	0- 0	0	0- 0	0	0- 0	0	7
1915	128- 0	302	0-10	3	2- 2	7	12-15	39	19- 4	51	29- 2	69	32-11	70	21-13	40	2-14	5	1- 4	2	0-11	1	1
Average	**161.3**	**442**	**12.3**	**54**	**19.6**	**66**	**26.6**	**78**	**30.0**	**76**	**30.4**	**70**	**21.4**	**44**	**8.2**	**15**	**3.5**	**6**	**1.8**	**3**	**0.4**	**1**	**2**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
107. Washington strain:																							
Orchard grade—																							
1910	96–14	210																					
1911	159– 0	314	0– 6	2	1–10	5	3– 8	10	14– 7	36	25– 7	57	52–11	103	18– 3	33	29– 4	48	13– 8	20	0– 0	0	
1912	163– 8	436	11– 4	44	26– 0	83	21–14	62	52–14	135	30–10	70	18–10	38	1– 2	2	1– 2	2	0– 0	0	0– 0	0	
1913	97– 6	284	9–14	43	16– 0	56	27–12	83	18– 2	46	18– 3	42	5– 9	11	1– 2	2	0– 0	0	0–12	1	0– 0	0	
1914	92– 3	213	0– 8	2	2– 4	7	16– 6	45	27– 4	66	30– 2	65	13– 2	24	1–14	3	0–11	1	0– 0	0	0– 0	0	
1915	105– 8	246	0– 0	0	3– 2	11	9–14	30	24–14	64	30–14	70	21–14	45	10– 9	19	4– 5	7	0– 0	0	0– 0	0	
Average	**119.1**	**281**	**4.4**	**18**	**9.8**	**32**	**15.9**	**46**	**27.5**	**69**	**27.1**	**61**	**22.4**	**41**	**6.6**	**12**	**7.1**	**12**	**2.9**	**4**	**0**	**0**	
Standard grade—																							
1910	10– 5	23																					
1911	16– 3	35	0–14	3	0–10	2	3– 5	9	2–11	6	2– 6	5	2– 4	4	0–11	1	1– 4	2	2– 2	3	0– 0	0	
1912	19– 8	64	5–11	27	2–12	9	3– 9	10	4–14	12	2–10	6	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	
1913	32– 6	120	14– 4	67	7– 4	25	6– 8	19	0– 6	1	2– 5	5	1– 1	2	0– 0	0	0–10	1	0– 0	0	0– 0	0	
1914	21– 5	70	4– 2	19	3– 4	10	6–10	18	5– 8	13	3– 5	7	1– 8	3	0– 0	0	0– 0	0	0– 0	0	0– 0	0	
1915	37– 1	91	1– 0	5	1–12	6	5–12	17	4–14	13	9– 2	22	7– 3	15	3–12	7	3– 0	5	0–10	1	0– 0	0	
Average	**23.3**	**67**	**5.2**	**24**	**3.1**	**10**	**5.2**	**15**	**3.7**	**9**	**4.0**	**9**	**2.4**	**5**	**0.9**	**2**	**1.0**	**2**	**0.6**	**1**	**0**	**0**	
Cull fruits—																							
1910	0– 0	0																					
1911	2– 0	5																					
1912	12– 0	60																					
1913	21– 0	94																					
1914	5–10	30																					
1915	3–14	11																					
Average	**7.4**	**33**																					

Total crop—																						
1910	107–3	233	1–10	7	2–14	9	8–3	24	14–14	38	22–14	47	19–12	40	17–8	35	13–15	24	4–15	8	0–10	1	
1911	177–3	354	1–4	5	2–4	7	6–13	19	17–2	42	27–13	62	54–15	107	18–14	34	30–8	50	15–10	23	0–0	0	
1912	195–0	560	16–15	71	28–12	92	25–7	72	57–12	147	33–4	76	18–10	38	1–2	2	1–2	2	0–0	0	0–0	0	3
1913	150–12	498	24–2	110	23–4	81	34–4	102	18–8	47	20–8	47	6–10	13	1–2	2	0–10	1	0–12	1	0–0	0	0
1914	122–2	313	4–10	21	5–8	17	23–0	63	32–12	79	33–7	72	14–10	27	1–14	3	0–11	1	0–0	0	0–0	0	4
1915	146–7	348	1–0	5	4–14	17	15–10	47	29–12	77	40–0	92	29–1	60	14–5	26	7–5	12	0–10	1	0–0	0	1
Average	**149.8**	**384**	**8.3**	**36**	**11.3**	**37**	**18.9**	**55**	**28.5**	**72**	**29.7**	**66**	**23.9**	**48**	**9.1**	**17**	**9.0**	**15**	**3.6**	**5**	**0.1**	**0**	**2**
112. Washington strain:																						
Orchard grade—																						
1910	115–0	246																					
1911	127–2	255	0–10	2	3–0	9	2–13	8	12–13	32	22–12	50	43–4	84	8–12	16	24–2	40	9–0	14	0–0	0	
1912	151–0	415	13–2	50	28–8	90	29–12	84	40–1	103	25–15	60	12–6	26	0–0	0	1–4	2	0–0	0	0–0	0	
1913	98–12	277	7–14	34	11–11	42	25–9	77	19–3	50	19–6	45	10–5	21	3–6	6	0–0	0	1–6	2	0–0	0	
1914	114–14	282	1–0	4	6–1	20	29–14	83	28–2	69	37–4	82	10–4	20	2–5	4	0–0	0	0–0	0	0–0	0	
1915	99–5	214	0–0	0	0–9	2	3–8	11	11–8	31	25–2	60	23–0	48	24–12	45	7–8	12	1–15	3	1–7	2	
Average	**117.7**	**282**	**4.5**	**18**	**10.0**	**33**	**18.3**	**53**	**22.3**	**57**	**26.1**	**59**	**19.8**	**40**	**7.8**	**14**	**6.6**	**11**	**2.5**	**4**	**0.3**	**0.4**	
Standard grade—																						
1910	11–1	27																					
1911	17–2	44	1–8	8	1–10	6	2–12	7	2–2	5	5–14	12	2–10	5	0–0	0	0–10	1	0–0	0	0–0	0	
1912	10–5	35	2–14	15	1–14	6	1–10	5	1–2	3	1–5	3	0–15	2	0–9	1	0–0	0	0–0	0	0–0	0	
1913	21–9	72	6–0	26	7–3	25	3–7	10	0–6	1	2–8	6	1–8	3	0–9	1	0–0	0	0–0	0	0–0	0	
1914	25–13	77	4–8	22	3–8	11	7–4	20	5–6	13	3–2	7	1–8	3	0–9	1	0–0	0	0–0	0	0–0	0	
1915	38–2	84	0–8	4	0–0	0	1–4	4	2–2	6	3–10	9	16–9	36	8–0	15	2–15	5	2–8	4	0–10	1	
Average	**20.7**	**57**	**3.1**	**15**	**2.8**	**10**	**3.3**	**9**	**2.2**	**6**	**3.4**	**7**	**4.6**	**10**	**1.9**	**4**	**0.7**	**1**	**0.5**	**1**	**0.1**	**0.2**	
Cull fruits—																						
1910	0–0	0																					
1911	1–14	4																					
1912	5–2	24																					
1913	9–10	45																					
1914	5–11	34																					
1915	6–0	20																					
Average	**4.7**	**21**																					
Total crop—																						
1910	126–1	273	0–8	2	1–4	4	6–8	19	13–14	37	31–4	72	31–5	65	19–8	37	12–11	22	4–13	8	4–6	7	
1911	146–2	299	2–2	10	4–10	15	5–9	15	14–15	37	28–10	62	45–14	89	8–12	16	24–12	41	9–0	14	0–0	0	
1912	166–7	474	16–0	65	30–6	96	31–6	89	41–3	106	27–4	63	13–5	28	0–9	1	1–4	2	0–0	0	0–0	0	2
1913	129–15	394	13–14	60	18–14	67	29–0	87	19–9	51	21–14	51	11–13	24	3–15	7	0–0	0	1–6	2	0–0	0	0
1914	146–6	393	5–8	26	9–9	31	37–2	103	33–8	82	40–6	89	11–12	23	2–14	5	0–0	0	0–0	0	0–0	0	12
1915	143–7	318	0–8	4	0–9	2	4–12	15	13–10	37	28–12	69	39–9	84	32–12	60	10–7	17	4–7	7	2–1	3	1
Average	**143.1**	**359**	**6.4**	**28**	**10.9**	**36**	**19.1**	**55**	**22.8**	**58**	**29.7**	**68**	**25.6**	**52**	**11.4**	**21**	**8.2**	**14**	**3.2**	**5**	**1.1**	**1**	**4**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
117. Washington strain:																							
Orchard grade—																							
1910	86- 8	194	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	114- 5	259	2-14	11	7- 8	23	9-12	27	26- 6	65	18-11	42	31- 0	61	5- 0	9	10- 8	17	2-10	4	0- 0	0	....
1912	134- 8	396	23- 2	93	25- 5	81	25- 5	74	37- 5	96	14- 4	33	8- 2	17	0- 0	0	1- 1	2	0- 0	0	0- 0	0	....
1913	117- 6	403	29-15	144	21- 7	79	29-11	92	15- 9	42	13- 1	31	5- 6	11	2- 5	4	0- 0	0	0- 0	0	0- 0	0	....
1914	95- 0	238	2- 2	9	5- 8	18	20-14	60	20- 3	51	35- 9	79	8- 2	16	2-10	5	0- 0	0	0- 0	0	0- 0	0	....
1915	84- 3	192	0- 2	2	0-14	3	9- 5	28	12-14	34	25- 0	58	16-10	34	10-14	20	3-12	6	3- 4	5	1- 8	2	....
Average	**105.3**	**280**	**11.6**	**52**	**12.1**	**41**	**19.0**	**56**	**22.5**	**58**	**21.3**	**49**	**13.9**	**28**	**4.2**	**8**	**3.1**	**5**	**1.2**	**2**	**0.3**	**0.4**	....
Standard grade—																							
1910	11- 0	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	13- 3	31	0- 5	1	1-11	5	3- 2	8	2- 9	6	2- 6	5	3- 2	6	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1912	12- 4	57	8- 0	45	2-10	8	0-12	2	0- 0	0	0-14	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	20- 0	82	7-14	43	4- 6	17	4- 1	13	1-15	5	1- 4	3	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	23- 7	92	7- 0	46	4- 4	14	6-10	19	1- 8	4	2- 2	5	1-15	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	36- 8	98	0-14	6	3- 9	13	5- 6	17	3- 5	10	4-14	13	10- 8	24	4-10	9	2-12	5	0-10	1	0- 0	0	....
Average	**19.4**	**65**	**4.8**	**28**	**3.3**	**11**	**4.0**	**12**	**1.9**	**5**	**2.3**	**6**	**1.4**	**7**	**0.9**	**2**	**0.6**	**1**	**0.1**	**0.2**	**0**	**0**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	2-10	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	3- 4	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	12-14	60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	2- 6	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	2- 8	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**3.9**	**19**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																							
1910	97- 8	222	0-12	3	2- 8	9	5- 0	16	11- 8	31	27- 6	67	23- 2	47	22- 4	41	3-13	6	0- 9	1	0-10	1	....
1911	130- 2	297	3- 3	12	9- 3	28	12-14	35	28-15	71	21- 1	47	34- 2	67	5- 0	9	10- 8	17	2-10	4	0- 0	0	....
1912	150- 0	473	31- 2	138	27-15	89	26- 1	76	37- 5	96	15- 2	35	8- 2	17	0- 0	0	1- 1	2	0- 0	0	0- 0	0	4
1913	150- 4	545	37-13	187	25-13	96	33-12	105	17- 8	47	14- 5	34	5-14	12	2- 5	4	0- 0	0	0- 0	0	0- 0	0	0
1914	120-13	344	9- 2	55	9-12	32	27- 8	79	21-11	55	37-11	84	10- 1	20	2-10	5	0- 0	0	0- 0	0	0- 0	0	9
1915	123- 3	302	1- 0	8	4- 7	16	14-11	45	16- 3	44	29-14	71	27- 2	58	15- 8	29	6- 8	11	3-14	6	1- 8	2	3
Average	**128.6**	**364**	**13.8**	**67**	**13.3**	**45**	**20.0**	**59**	**22.2**	**57**	**24.2**	**56**	**18.1**	**37**	**7.9**	**15**	**3.7**	**6**	**1.2**	**2**	**0.3**	**1**	**4**
121. Washington strain:																							
Orchard grade—																							
1910	85- 0	203	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	139- 1	296	1- 4	5	4-12	15	6-11	19	21-1	53	17-11	40	42-15	86	11- 7	22	23- 4	40	10- 0	16	0- 0	0	....
1912	125- 9	366	20-12	87	21-10	70	20-12	60	29-0	75	19- 6	45	12- 7	26	0- 0	0	1- 0	2	0-10	1	0- 0	0	....
1913	84-14	280	19- 2	89	14- 7	53	23- 8	72	11-1	29	10-14	25	4- 5	9	1- 9	3	0- 0	0	0- 0	0	0- 0	0	....
1914	80- 3	185	0- 0	0	4- 0	13	13-10	38	16-4	40	25- 6	55	14- 7	28	5-14	10	0-10	1	0- 0	0	0- 0	0	....
1915	31-12	68	0- 0	0	0- 0	0	1-11	5	5-4	13	8- 6	19	7- 7	15	7-12	14	0-10	1	0-10	1	0- 0	0	....
Average	**91.1**	**233**	**8.2**	**36**	**9.0**	**30**	**13.3**	**39**	**16.5**	**42**	**16.3**	**37**	**16.3**	**33**	**5.3**	**10**	**5.1**	**9**	**2.3**	**4**	**0**	**0**	....
Standard grade—																							
1910	11-14	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	14- 6	36	1- 5	6	2- 3	7	1- 3	3	4- 6	10	1- 5	3	1- 1	2	1-11	3	1- 4	2	0- 0	0	0- 0	0	....
1912	13- 9	54	6- 0	33	1-14	6	2- 1	6	2- 5	6	1- 5	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	29- 2	129	17- 6	93	5- 6	19	2-15	9	1- 2	3	0-14	2	1- 7	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	22-10	64	2-14	12	4-11	15	7-12	21	2- 0	5	4- 1	9	0- 0	0	0- 0	0	1- 4	2	0- 0	0	0- 0	0	....
1915	54-11	138	1- 2	5	2- 2	8	6-10	21	7-10	21	11-11	30	14-14	33	6-10	13	2-14	5	1- 2	2	0- 0	0	....
Average	**24.4**	**75**	**5.7**	**30**	**3.3**	**11**	**4.1**	**12**	**3.5**	**9**	**3.9**	**9**	**3.5**	**8**	**1.7**	**3**	**1.1**	**2**	**0.2**	**0.4**	**0**	**0**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	0-12	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	7-15	35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	10- 4	44	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	2- 4	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	2- 9	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**4.0**	**17**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	96-14	233	4- 0	16	3- 8	11	10- 4	30	17-12	47	34- 5	79	12- 4	25	8- 3	15	4-15	8	1-11	2	0- 0	0	....
1911	154- 3	334	2- 9	11	6-15	22	7-14	22	25- 7	63	19- 0	43	44- 0	88	13- 2	25	24- 8	42	10- 0	16	0- 0	0	....
1912	147- 1	455	26-12	120	23- 8	76	22-13	66	31- 5	81	20-11	48	12- 7	26	0- 0	0	1- 0	2	0-10	1	0- 0	0	3
1913	124- 4	453	36- 8	182	19-13	72	26- 7	81	12- 3	32	11-12	27	5-12	12	1- 9	3	0- 0	0	0- 0	0	0- 0	0	2
1914	105- 1	263	2-14	12	8-11	28	21- 6	59	18- 4	45	29- 7	64	14- 7	28	5-14	10	1-14	3	0- 0	0	0- 0	0	6
1915	89- 0	213	1- 2	5	2- 2	8	8- 5	26	12-14	34	20- 1	49	22- 5	48	14- 6	27	3- 8	6	1-12	3	0- 0	0	1
Average	**119.4**	**325**	**12.3**	**58**	**10.8**	**36**	**16.2**	**47**	**19.6**	**50**	**22.6**	**52**	**18.5**	**38**	**7.2**	**13**	**5.9**	**10**	**2.3**	**4**	**0**	**0**	**3**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
130. Washington strain:																							
Orchard grade—																							
1910	88 15	245	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1911	94-10	226	4-12	19	6- 8	20	12- 6	34	22 12	56	20- 4	45	18-15	37	1-11	3	6-10	11	0-12	1	0- 0	0	....
1912	102- 8	319	27- 1	111	28 10	90	14-14	42	19- 4	49	9- 0	20	2- 9	5	0- 0	0	1- 2	2	0- 0	0	0- 0	0	....
1913	94 13	307	20- 4	100	14-14	55	18- 8	57	14 10	38	14 11	34	8- 1	16	3- 4	6	0- 9	1	0- 0	0	0- 0	0	....
1914	58-12	132	1- 9	6	1 14	6	6-13	19	9-12	24	21- 0	45	12- 6	23	4 12	8	0 10	1	0- 0	0	0- 0	0	....
1915	80- 9	176	0- 0	0	2 10	9	8- 0	24	9 11	25	23- 6	53	10- 8	21	17 12	31	3-13	6	4 13	7	0- 0	0	....
Average	**86.7**	**234**	**10.7**	**47**	**10.9**	**36**	**12.1**	**35**	**15.2**	**38**	**17.7**	**39**	**10.5**	**20**	**5.5**	**10**	**2.6**	**4**	**1.1**	**2**	**0**	**0**	....
Standard grade—																							
1910	15- 7	46	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1911	9 12	27	2- 5	10	0 11	2	2- 4	6	0- 7	1	2- 6	5	1- 1	2	0- 0	0	0 10	1	0- 0	0	0- 0	0	....
1912	18 13	90	14- 0	76	2-14	9	0- 6	1	1- 9	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	19- 1	75	8- 8	44	4-15	17	1- 5	4	1- 9	4	1-12	4	1- 0	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	13-13	44	4- 8	22	0-10	2	3-11	10	0 14	2	1 14	4	2- 4	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	32- 6	77	1-10	7	1 12	6	3 14	11	3- 6	9	6-12	16	8 12	19	3 14	5	1- 2	2	1- 4	2	0- 0	0	....
Average	**18.2**	**60**	**6.2**	**32**	**2.2**	**7**	**2.3**	**6**	**1.6**	**4**	**2.6**	**6**	**2.6**	**5**	**0.8**	**1**	**0.4**	**1**	**0.3**	**0.4**	**0**	**0**	....
Cull fruits—																							
1910	0- 0	0	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1911	4- 6	12	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1912	6 7	43	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1913	15- 5	66	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1914	2 10	14	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1915	2- 2	8	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
Average	**5.2**	**24**	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....

Total crop—																							
1910	104- 6	291	5- 6	24	15- 6	53	16- 0	51	21-11	59	24- 0	59	14- 0	30	6-12	13	0- 9	1	0-10	1	0- 0	0	....
1911	108-12	265	7- 1	29	7- 3	22	14-10	40	23- 3	57	22-10	50	20- 0	39	1-11	3	7- 4	12	0-12	1	0- 0	0	....
1912	127-12	452	41- 1	187	31- 8	99	15- 4	43	20-13	53	9- 0	20	2- 9	5	0- 0	0	1- 2	2	0- 0	0	0- 0	0	3
1913	129- 3	448	28-12	144	19-13	72	19-13	61	16- 3	42	16- 7	33	9- 1	18	3- 4	6	0- 9	1	0- 0	0	0- 0	0	0
1914	75- 3	190	6- 1	28	2- 8	8	10- 8	29	10-10	26	22-14	49	14-10	27	4-12	8	0-10	1	0- 0	0	0- 0	0	5
1915	115- 1	261	1-10	7	4- 6	15	11-14	35	13- 1	34	30- 2	69	19- 4	40	21-10	36	4-15	8	6- 1	9	0- 0	0	1
Average	**110.1**	**318**	**15.0**	**70**	**13.5**	**45**	**14.7**	**43**	**17.6**	**45**	**20.9**	**47**	**13.2**	**27**	**6.3**	**11**	**2.5**	**4**	**1.2**	**2**	**0**	**0**	**2**
131. Unproductive strain:																							
Orchard grade—																							
1910	51- 8	123	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	128-10	284	1-10	6	7- 3	23	11- 0	30	25- 8	63	19- 4	43	35- 3	69	7- 9	14	16- 4	28	5- 1	8	0- 0	0	....
1912	114- 7	355	29- 7	119	29-14	96	15-10	45	26- 1	66	6-14	16	6- 0	12	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1913	85-13	289	25-13	122	13-13	50	20- 0	57	9-13	25	10-15	25	3-11	7	1-12	3	0- 0	0	0- 0	0	0- 0	0	....
1914	53- 1	117	0- 0	2	3- 6	11	9- 0	25	8-10	21	12- 4	26	11- 6	20	6- 8	10	1- 7	2	0- 0	0	0- 0	0	....
1915	42- 9	97	0- 0	0	0-14	3	3- 6	10	9-14	25	14- 8	33	7- 6	15	2-12	5	3- 3	5	0-10	1	0- 0	0	....
Average	**79.3**	**211**	**11.5**	**50**	**11.0**	**37**	**11.8**	**33**	**16.0**	**40**	**12.8**	**29**	**12.7**	**25**	**3.8**	**7**	**4.2**	**7**	**1.1**	**2**	**0**	**0**	....
Standard grade—																							
1910	13- 2	34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	21- 0	53	1- 1	4	4-12	14	5-13	15	3-13	9	3- 8	7	2- 1	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1912	37-15	166	25- 7	130	5-11	18	2-13	8	2- 5	6	1-11	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	31-12	129	16- 3	82	6-12	23	5- 0	15	1- 9	4	1-12	4	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	13-11	38	1-15	10	3- 0	9	2-10	7	0- 7	1	2- 7	5	2-10	5	0-10	1	0- 0	0	0- 0	0	0- 0	0	....
1915	13- 2	33	1- 0	4	1-14	6	2- 2	6	0-12	2	1-12	4	4- 0	8	1-10	3	0- 0	0	0- 0	0	0- 0	0	....
Average	**21.8**	**76**	**9.1**	**46**	**4.4**	**14**	**3.7**	**10**	**1.8**	**4**	**2.2**	**5**	**1.8**	**4**	**0.5**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	5- 8	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	10-14	64	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	20- 6	94	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	3- 4	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	1- 7	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**6.9**	**32**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	64-10	157	0-12	3	2-10	10	7- 0	22	16- 4	42	18-12	42	12- 2	25	5- 4	10	0-10	1	1- 4	2	0- 0	0	....
1911	155- 2	352	2-11	10	11-15	37	16-13	45	29- 5	72	22-12	50	37- 4	73	7- 9	14	16- 4	28	5- 1	8	0- 0	0	....
1912	163- 4	585	54-14	249	35- 9	114	18- 7	53	28- 6	72	8- 9	20	6- 0	12	0- 9	1	0- 0	0	0- 0	0	0- 0	0	2
1913	137-15	512	42- 0	204	20- 9	73	25- 0	72	11- 6	29	12-11	29	4- 3	8	1-12	3	0- 0	0	0- 0	0	0- 0	0	0
1914	70- 0	172	2- 7	12	6- 6	20	11-10	32	9- 1	22	14-11	31	14- 0	25	7- 2	11	1- 7	2	0- 0	0	0- 0	0	6
1915	57- 2	134	1- 0	4	2-12	9	5- 8	16	10-10	27	16- 4	37	11- 6	23	4- 6	8	3- 3	5	0-10	1	0- 0	0	0
Average	**108.0**	**319**	**17.3**	**80**	**13.3**	**44**	**14.1**	**40**	**17.5**	**44**	**15.6**	**35**	**14.2**	**28**	**4.4**	**8**	**3.6**	**6**	**1.1**	**2**	**0**	**0**	**2**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
136. Washington strain:																							
Orchard grade—																							
1910	78- 6	194	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	85-14	184	0-13	3	2-11	8	5- 2	14	18- 8	46	14- 9	33	21- 0	42	5- 1	9	9- 6	16	7-14	12	0-14	1	....
1912	108-10	325	16- 6	68	30-10	99	18-11	54	27-10	71	8-10	20	5- 8	11	0- 9	1	0-10	1	0- 0	0	0- 0	0	....
1913	102- 0	335	20- 8	101	16- 6	60	24- 5	76	16-13	45	16- 6	38	5-13	12	1- 2	2	0- 0	0	0-11	1	0- 0	0	....
1914	57- 1	136	0-12	3	3-10	12	9- 8	27	9-13	24	21-10	48	8-12	17	1-12	3	1- 4	2	0- 0	0	0- 0	0	....
1915	40-11	96	0- 0	0	1- 2	4	5- 2	15	8- 5	22	13- 2	30	7-14	16	3- 5	6	1- 3	2	0-10	1	0- 0	0	....
Average	**78.8**	**212**	**7.7**	**35**	**10.9**	**37**	**12.6**	**37**	**16.2**	**42**	**14.9**	**34**	**9.8**	**20**	**2.4**	**4**	**2.5**	**4**	**1.8**	**3**	**0.2**	**0.2**	....
Standard grade—																							
1910	12- 7	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	17- 5	41	1- 3	5	1-14	6	3- 2	8	1-11	4	3- 4	7	3-10	7	0-10	1	1-15	3	0- 0	0	0- 0	0	....
1912	17-10	71	9- 4	46	3-10	12	3- 2	9	1- 2	3	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	19- 5	81	10- 8	53	3-13	15	1- 5	4	1- 7	4	1-12	4	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	12-13	39	2- 9	13	1-13	6	3- 6	9	1-12	4	2- 6	5	0-15	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	29- 4	69	0- 5	2	0- 0	0	2-14	9	3-12	10	6- 4	16	7-11	17	3- 2	6	3- 8	6	1-12	3	0- 0	0	....
Average	**18.1**	**55**	**4.8**	**24**	**2.2**	**8**	**2.8**	**8**	**2.0**	**5**	**2.8**	**7**	**2.6**	**5**	**0.8**	**1**	**1.1**	**2**	**0.4**	**1**	**0**	**0**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	4-12	27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	12- 6	49	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	3- 6	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	3- 0	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**3.9**	**17**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																							
1910	90-13	224	3-3	13	2-12	9	7-9	22	23-9	63	26-0	61	16-0	34	8-3	16	2-15	5	0-0	0	0-10	1	....
1911	103-3	225	2-0	8	4-9	14	8-4	22	20-3	50	17-13	40	24-10	49	5-11	10	11-5	19	7-14	12	0-14	1	....
1912	131-0	423	25-10	114	34-4	111	21-13	63	28-12	74	9-2	21	5-8	11	0-9	1	0-10	1	0-0	0	0-0	0	0
1913	133-11	465	31-0	154	20-3	75	25-10	80	18-4	49	18-2	42	6-5	13	1-2	2	0-0	0	0-11	1	0-0	0	0
1914	73-4	190	3-5	16	5-7	18	12-14	36	11-9	28	24-0	53	9-11	19	1-12	3	1-4	2	0-0	0	0-0	0	4
1915	72-15	174	0-5	2	1-2	4	8-0	24	12-1	32	19-6	46	15-9	33	6-7	12	4-11	8	2-6	4	0-0	0	1
Average	**100.8**	**284**	**10.9**	**51**	**11.4**	**38**	**14.0**	**41**	**19.1**	**49**	**19.1**	**44**	**13.0**	**27**	**4.0**	**8**	**3.4**	**6**	**1.8**	**3**	**0.2**	**0.3**	**1**
137. Unproductive strain:																							
Orchard grade—																							
1910	110-9	291	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	79-5	156	0-3	1	1-11	5	4-3	11	8-12	21	13-8	29	22-12	44	2-14	5	14-2	23	11-4	17	0-0	0	....
1912	107-10	330	26-13	106	31-4	99	19-9	55	19-0	47	5-13	13	4-0	8	0-9	1	0-10	1	0-0	0	0-0	0	....
1913	94-10	268	8-2	36	15-8	57	19-15	60	15-5	40	16-11	38	13-14	28	3-15	7	1-4	2	0-0	0	0-0	0	....
1914	44-10	102	0-0	0	2-9	8	3-0	8	12-2	30	18-8	40	7-14	15	0-9	1	0-0	0	0-0	0	0-0	0	....
1915	41-7	84	0-0	0	0-5	1	2-0	6	4-8	12	7-8	17	11-2	22	8-0	14	3-12	6	2-12	4	1-8	2	....
Average	**79.7**	**205**	**7.0**	**29**	**10.3**	**34**	**9.5**	**28**	**11.9**	**30**	**12.4**	**27**	**11.9**	**23**	**3.2**	**6**	**4.0**	**6**	**2.8**	**4**	**0.3**	**0.4**	....
Standard grade—																							
1910	15-3	42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	15-3	37	0-14	4	1-12	5	4-7	12	2-10	5	3-5	7	1-0	2	0-0	0	1-3	2	0-0	0	0-0	0	....
1912	8-15	48	7-0	43	0-11	2	0-0	0	0-12	2	0-0	0	0-8	1	0-0	0	0-0	0	0-0	0	0-0	0	....
1913	16-4	54	3-12	19	3-10	13	3-3	9	2-4	6	0-14	2	2-0	4	0-9	1	0-0	0	0-0	0	0-0	0	....
1914	13-14	48	5-1	26	1-4	4	2-14	8	2-2	5	0-14	2	0-8	1	1-3	2	0-0	0	0-0	0	0-0	0	....
1915	17-14	36	0-2	1	0-0	0	0-5	1	0-6	1	2-1	5	4-2	9	5-4	10	1-12	3	3-3	5	0-11	1	....
Average	**14.6**	**44**	**3.4**	**19**	**1.5**	**5**	**2.2**	**6**	**1.6**	**4**	**1.4**	**3**	**1.6**	**3**	**1.4**	**3**	**0.6**	**1**	**0.6**	**1**	**0.1**	**0.2**	....
Cull fruits—																							
1910	0-0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	4-0	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	5-3	27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	20-7	79	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	2-6	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	3-10	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**5.9**	**23**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	125-12	333	6-4	24	7-14	26	5-5	15	32-3	101	49-4	116	21-3	44	3-4	6	0-7	1	0-0	0	0-0	0	....
1911	98-8	201	1-1	5	3-7	10	8-10	23	11-6	26	16-13	36	23-12	46	2-14	5	15-5	25	11-4	17	0-0	0	....
1912	121-12	405	33-13	149	31-15	101	19-9	55	19-12	49	5-13	13	4-8	9	0-9	1	0-10	1	0-0	0	0-0	0	0
1913	131-5	401	11-14	55	19-2	70	23-2	69	17-9	46	17-9	40	15-14	32	4-8	8	1-4	2	0-0	0	0-0	0	0
1914	60-14	162	5-1	26	3-13	12	5-14	16	14-4	35	19-6	42	8-6	16	1-12	3	0-0	0	0-0	0	0-0	0	1
1915	62-15	130	0-2	1	0-5	1	2-5	7	4-14	13	9-9	22	15-4	31	13-4	24	5-8	9	5-15	9	2-3	3	0
Average	**100.2**	**272**	**9.7**	**43**	**11.1**	**36**	**10.8**	**31**	**16.7**	**45**	**19.7**	**45**	**14.8**	**30**	**4.4**	**8**	**3.8**	**6**	**2.9**	**4**	**0.4**	**0.5**	**0.3**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																					Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.	
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
141. Unproductive strain:																							
Orchard grade—																							
1910	51– 7	117	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....
1911	98– 0	219	3– 0	11	5–15	18	6–14	19	21– 6	53	15– 0	33	23– 4	46	7– 9	14	10– 8	18	4– 8	7	0– 0	0	....
1912	109– 4	335	23– 6	97	25– 9	82	20–14	61	22–11	59	10–12	24	4– 6	9	1– 1	2	0– 9	1	0– 0	0	0– 0	0	....
1913	88– 1	303	21– 6	106	14–12	54	24– 4	75	11– 8	31	13– 0	31	1– 8	3	1–11	3	0– 0	0	0– 0	0	0– 0	0	....
1914	43– 6	92	0– 4	1	1– 9	5	5– 6	15	9– 8	23	15– 6	32	6– 2	11	4– 9	4	0–10	1	0– 0	0	0– 0	0	....
1915	29–15	64	0– 0	0	0–14	3	2– 2	6	3–14	10	6– 6	14	9– 0	18	4–10	8	2– 7	4	0–10	1	0– 0	0	....
Average	**70.0**	**188**	**9.6**	**43**	**9.7**	**32**	**11.9**	**35**	**13.8**	**35**	**12.1**	**27**	**8.9**	**17**	**3.9**	**6**	**2.8**	**5**	**1.0**	**2**	**0**	**0**	....
Standard grade—																							
1910	9– 6	23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....
1911	15– 7	39	2– 4	8	2–12	8	2–12	7	2–15	7	2– 7	5	1–11	3	0–10	1	0– 0	0	0– 0	0	0– 0	0	....
1912	16– 1	69	9– 2	50	2– 8	8	1– 0	3	1– 9	4	1– 6	3	0– 8	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	31– 3	124	14– 0	76	4–11	17	4– 6	13	1– 2	3	2–15	7	3– 7	7	0– 0	0	0–10	1	0– 0	0	0– 0	0	....
1914	5–15	22	2– 0	12	0– 0	0	2– 5	6	0–12	2	0–14	2	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1915	37–13	84	0– 4	2	0– 4	1	2–15	9	1–12	5	4–12	12	9– 8	21	10–15	21	6– 2	11	0–10	1	0–11	1	....
Average	**19.3**	**60**	**5.5**	**30**	**2.0**	**7**	**2.7**	**8**	**1.6**	**4**	**2.5**	**6**	**3.0**	**6**	**2.3**	**4**	**1.4**	**2**	**0.1**	**0.2**	**0.1**	**0.2**	....
Cull fruits—																							
1910	0– 0	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....
1911	1– 8	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....
1912	5– 4	42	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....
1913	10– 3	59	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....
1914	0– 8	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....
1915	1–12	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....
Average	**3.2**	**19**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....

Total crop—																						
1910	60–13	140	0–13	4	3–0	10	3–12	11	8–14	24	18–0	41	9–12	20	10–1	19	5–15	10	0–10	1	0–0	0	....
1911	114–15	263	5–4	19	8–11	26	9–10	26	24–5	60	17–7	38	24–15	49	8–3	15	10–8	18	4–8	7	0–0	0	....
1912	130–9	446	32–8	147	28–1	90	21–14	64	24–4	63	12–2	27	4–14	10	1–1	2	0–9	1	0–0	0	0–0	0	1
1913	129–7	486	35–6	182	19–7	71	28–10	88	12–10	34	15–15	38	4–15	10	1–11	3	0–10	1	0–0	0	0–0	0	4
1914	49–13	117	2–4	13	1–9	5	7–11	21	10–4	25	16–4	34	6–2	11	4–9	4	0–10	1	0–0	0	0–0	0	3
1915	69–8	152	0–4	2	1–2	4	5–1	15	5–10	15	11–2	26	18–8	39	15–9	29	8–9	15	1–4	2	0–11	1	0
Average	**92.5**	**267**	**12.7**	**61**	**10.3**	**34**	**12.8**	**37**	**14.3**	**37**	**15.2**	**34**	**11.5**	**23**	**6.8**	**12**	**4.5**	**8**	**1.1**	**2**	**0.1**	**0**	**2**
145. Unproductive strain:																						
Orchard grade—																						
1910	50–6	130	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	71–8	146	0–2	1	3–0	9	4–8	12	11–10	28	13–5	29	17–12	34	4–0	7	7–15	13	9–4	13	0–0	0	....
1912	91–7	269	20–15	84	21–4	67	11–8	32	17–10	44	10–12	24	8–3	16	0–9	1	0–10	1	0–0	0	0–0	0	....
1913	69–15	218	12–7	58	12–14	46	15–5	47	11–2	29	10–14	24	5–0	10	2–5	4	0–0	0	0–0	0	0–0	0	....
1914	30–8	69	0–15	4	1–8	5	4–6	12	5–12	14	8–9	18	6–12	12	2–0	3	0–10	1	0–0	0	0–0	0	....
1915	27–13	60	0–0	0	0–8	2	1–6	4	6–0	15	6–4	14	6–9	13	5–4	9	1–4	2	0–10	1	0–0	0	....
Average	**56.9**	**149**	**6.9**	**29**	**7.8**	**26**	**7.4**	**21**	**10.4**	**26**	**10.0**	**22**	**8.9**	**17**	**2.8**	**5**	**2.1**	**3**	**2.0**	**3**	**0**	**0**	....
Standard grade—																						
1910	10–6	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	8–9	19	0–0	0	1–11	5	1–9	4	1–6	3	0–7	1	1–8	3	0–0	0	2–0	3	0–0	0	0–0	0	....
1912	23–12	98	13–9	68	5–14	19	1–6	4	2–0	5	0–7	1	0–8	1	0–0	0	0–0	0	0–0	0	0–0	0	....
1913	38–15	67	20–11	11	7–0	25	6–2	18	3–6	9	1–4	3	0–8	1	0–0	0	0–0	0	0–0	0	0–0	0	....
1914	12–3	36	1–12	8	2–13	9	4–6	12	1–11	4	0–15	2	0–0	0	0–0	0	0–10	1	0–0	0	0–0	0	....
1915	8–6	21	0–12	3	0–10	2	1–12	5	0–6	1	0–14	2	2–6	5	1–10	3	0–0	0	0–0	0	0–0	0	....
Average	**17.0**	**45**	**5.4**	**18**	**3.6**	**12**	**3.0**	**9**	**1.8**	**4**	**0.8**	**2**	**1.0**	**2**	**0.3**	**1**	**0.5**	**1**	**0**	**0**	**0**	**0**	....
Cull fruits—																						
1910	0–0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	5–12	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	7–3	56	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	11–0	49	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	3–2	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	0–6	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**4.6**	**23**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1910	60–12	160	3–4	13	4–14	15	8–12	25	13–0	39	21–14	50	6–12	14	1–2	2	1–2	2	0–0	0	0–0	0	....
1911	85–13	177	0–2	1	4–11	14	6–1	16	13–0	31	13–12	30	19–4	37	4–0	7	9–15	16	9–4	13	0–0	0	....
1912	122–6	423	34–8	152	27–2	86	12–14	36	19–10	49	11–3	25	8–11	17	0–9	1	0–10	1	0–0	0	0–0	0	1
1913	119–14	334	33–2	69	19–14	71	21–7	65	14–8	38	12–2	27	5–8	11	2–5	4	0–0	0	0–0	0	0–0	0	0
1914	45–13	122	2–11	12	4–5	14	8–12	24	7–7	18	9–8	20	6–12	12	2–0	3	1–4	2	0–0	0	0–0	0	2
1915	36–9	83	0–12	3	1–2	4	3–2	9	6–6	16	7–2	16	8–15	18	6–14	12	1–4	2	0–10	1	0–0	0	0
Average	**78.5**	**217**	**12.4**	**42**	**10.3**	**34**	**10.2**	**29**	**12.3**	**32**	**12.6**	**28**	**9.3**	**18**	**2.8**	**5**	**2.4**	**4**	**1.6**	**2**	**0**	**0**	**0.8**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																								Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Number
148. Unproductive strain:																							
Orchard grade—																							
1910	75– 5	189	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1911	66– 0	135	0– 6	2	1–14	6	3–10	10	9– 4	22	12– 0	25	21–10	42	2–11	5	8– 8	14	6– 1	9	0– 0	0	....
1912	103– 3	353	43– 2	174	34– 6	110	12–15	37	10– 8	27	1–12	4	0– 8	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	40– 1	95	0– 8	2	2– 9	9	6– 6	19	6–11	17	10– 7	24	4–11	9	7– 8	13	0–10	1	0–11	1	0– 0	0	....
1914	12–11	34	0– 8	2	2–12	9	2–12	8	2– 5	6	2– 4	5	2– 2	4	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1915	32–11	80	0– 4	1	1– 2	4	5– 2	15	7– 3	19	11– 4	26	5– 6	11	2– 6	4	0– 0	0	0– 0	0	0– 0	0	....
Average	**55.0**	**148**	**9.0**	**36**	**8.5**	**28**	**6.2**	**18**	**7.2**	**18**	**7.5**	**17**	**6.9**	**13**	**2.5**	**4**	**1.8**	**3**	**1.4**	**2**	**0**	**0**	....
Standard grade—																							
1910	15–12	43	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1911	10–13	26	0– 8	3	1– 0	3	1– 8	4	3– 2	7	2–14	6	0– 8	1	0–10	1	0–11	1	0– 0	0	0– 0	0	....
1912	14– 8	73	11–11	64	2– 1	7	0–12	2	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	16– 6	43	1– 2	5	2– 6	8	2–13	8	1–10	4	4–12	11	2– 0	4	1– 1	2	0–10	1	0– 0	0	0– 0	0	....
1914	0– 8	2	0– 8	2	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1915	9–11	26	0– 7	2	0– 8	2	3–12	11	0– 6	1	2– 2	5	2– 8	5	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
Average	**11.3**	**36**	**2.9**	**13**	**1.2**	**4**	**1.8**	**5**	**1.1**	**2**	**2.0**	**4**	**1.0**	**2**	**0.2**	**1**	**0.3**	**0.4**	**0**	**0**	**0**	**0**	....
Cull fruits—																							
1910	0– 0	0	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1911	3–13	9	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1912	1– 3	11	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1913	4– 9	17	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1914	7– 4	40	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1915	2– 8	9	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
Average	**3.2**	**14**	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....

Total crop—																							
1910	91- 1	232	0-12	3	4-13	17	16- 2	49	20-10	55	18-12	45	23-10	51	5- 4	10	1- 2	2	0- 0	0	0- 0	0	....
1911	80-10	170	0-14	5	2-14	9	5- 2	14	12- 6	29	14-14	31	22- 2	43	3- 5	6	9- 3	15	6- 1	9	0- 0	0	....
1912	118-14	437	54-13	238	36- 7	117	13-11	39	10- 8	27	1-12	4	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	1
1913	61- 0	155	1-10	7	4-15	17	9- 3	27	8- 5	21	15- 3	35	6-11	13	8- 9	15	1- 4	2	0-11	1	0- 0	0	0
1914	20- 7	76	1- 0	4	2-12	9	2-12	8	2- 5	6	2- 4	5	2- 2	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0
1915	44-14	115	0-11	3	1-10	6	8-14	26	7- 9	20	13- 6	31	7-14	16	2- 6	4	0- 0	0	0- 0	0	0- 0	0	2
Average	**69.5**	**198**	**10.0**	**43**	**8.9**	**29**	**9.3**	**27**	**10.3**	**26**	**11.0**	**25**	**10.5**	**22**	**3.3**	**6**	**1.9**	**3**	**1.1**	**2**	**0**	**0**	**0.8**
150. Unproductive strain:																							
Orchard grade—																							
1910	14- 0	42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	57- 2	140	2-10	10	7-14	24	7- 5	21	12- 8	31	7-10	17	12-10	25	3-11	7	2-14	5	0- 0	0	0- 0	0	....
1912	48- 2	146	8-14	34	17- 1	55	8- 4	23	8- 6	21	4- 2	10	1- 7	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	63- 1	178	7- 0	31	8- 2	28	17-11	51	8-14	23	12- 4	28	5-10	11	2-14	5	0-10	1	0- 0	0	0- 0	0	....
1914	43- 0	110	1- 6	5	4- 3	14	9-14	28	10- 3	26	10- 2	23	6- 2	12	1- 2	2	0- 0	0	0- 0	0	0- 0	0	....
1915	57- 6	134	0- 4	1	1- 8	5	4-14	14	15- 4	39	18-10	43	5-12	12	8- 8	16	0- 9	1	1- 6	2	0-11	1	....
Average	**47.1**	**125**	**4.0**	**16**	**7.8**	**25**	**9.6**	**27**	**10.8**	**28**	**10.6**	**24**	**6.3**	**13**	**3.2**	**6**	**0.8**	**1**	**0.3**	**0.4**	**0.1**	**0.2**	....
Standard grade—																							
1910	0-12	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	9-11	28	1-10	8	1-10	5	1-13	5	1-10	4	1-14	4	0- 8	1	0- 0	0	0-10	1	0- 0	0	0- 0	0	....
1912	15- 1	58	9- 4	40	4- 1	13	0-15	3	0- 6	1	0- 7	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	14- 6	52	4- 7	23	4- 2	14	2- 8	7	2-13	7	0- 0	0	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	10- 6	32	3- 1	13	1-14	6	2- 3	6	0-13	2	1- 7	3	1- 0	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	19-10	50	1- 8	6	1-12	6	1-10	5	2- 3	6	3- 8	9	5- 2	11	2- 2	4	0- 9	1	0- 9	1	0-11	1	....
Average	**11.7**	**37**	**4.0**	**18**	**2.7**	**9**	**1.8**	**5**	**1.6**	**4**	**1.5**	**3**	**1.4**	**3**	**0.4**	**1**	**0.2**	**0.4**	**0.1**	**0.2**	**0.1**	**0.2**	....
Cull fruits—																							
1910	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	1- 5	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	3- 2	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	9- 8	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	6- 3	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	3- 8	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**3.9**	**16**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1910	14-12	45	2- 0	8	1- 8	9	3- 0	9	3- 2	8	3- 4	7	1- 6	3	0- 8	1	0- 0	0	0- 0	0	0- 0	0	....
1911	68- 2	172	4- 4	18	9- 8	29	9- 2	26	14- 2	35	9- 8	21	13- 2	26	3-11	7	3- 8	6	0- 0	0	0- 0	0	....
1912	66- 5	217	18- 2	74	21- 2	68	9- 3	26	8-12	22	4- 9	11	1- 7	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	5
1913	86-15	266	11- 7	54	12- 4	42	20- 3	58	11-11	30	12- 4	28	6- 2	12	2-14	5	0-10	1	0- 0	0	0- 0	0	0
1914	59- 9	173	4- 7	18	6- 1	20	12- 1	34	11- 0	28	11- 9	26	7- 2	14	1- 2	2	0- 0	0	0- 0	0	0- 0	0	4
1915	80- 8	196	1-12	7	3- 4	11	6- 8	19	17- 7	45	22- 2	52	10-14	23	10-10	20	1- 2	2	1-15	3	1- 6	2	1
Average	**62.7**	**178**	**7.0**	**30**	**9.0**	**30**	**10.0**	**28**	**11.0**	**28**	**10.6**	**24**	**6.7**	**13**	**3.1**	**6**	**0.9**	**1**	**0.3**	**1**	**0.2**	**1**	**3**

TABLE III.—*Detailed statement of the annual performance of 35 representative Washington Navel orange trees for which records were obtained for six years, 1910 to 1915, inclusive, as summarized in Table II*—Continued.

Rank in Table II, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
151. Unproductive strain:																							
Orchard grade—																							
1910	27-4	56	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	69-7	112	0-0	0	0-0	0	0-0	0	2-15	7	4-14	10	13-5	25	2-3	4	18-6	29	18-2	26	9-10	11	....
1912	36-0	82	0-8	2	0-15	3	1-14	5	6-12	16	5-4	11	6-5	22	3-7	6	8-1	13	2-14	4	0-0	0	....
1913	14-3	34	0-8	2	0-5	1	1-6	4	4-12	12	3-2	7	3-0	6	1-2	2	0-0	0	0-0	0	0-0	0	....
1914	27-13	55	0-4	1	0-10	2	0-12	2	1-4	3	10-13	23	7-3	13	6-4	10	0-0	0	0-11	1	0-0	0	....
1915	35-13	76	0-0	0	0-0	0	0-11	2	1-14	5	12-12	29	13-8	28	3-14	7	1-12	3	0-0	0	1-6	2	....
Average	**35.1**	**69**	**0.3**	**1**	**0.4**	**1**	**0.9**	**3**	**3.5**	**9**	**7.4**	**16**	**8.7**	**19**	**3.4**	**6**	**5.6**	**9**	**4.3**	**6**	**2.2**	**3**	....
Standard grade—																							
1910	15-0	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	10-2	16	0-0	0	0-0	0	0-0	0	0-0	0	1-8	3	1-12	3	0-9	1	3-1	5	3-4	4	0-0	0	....
1912	12-5	27	0-10	2	1-7	4	0-14	2	2-2	5	3-7	7	3-4	6	0-9	1	0-0	0	0-0	0	0-0	0	....
1913	5-13	19	1-3	5	2-5	8	0-12	2	1-2	3	0-7	1	0-0	0	0-0	0	0-0	0	0-0	0	0-0	0	....
1914	4-6	11	0-5	2	0-0	0	1-4	3	1-4	3	0-0	0	1-9	3	0-0	0	0-0	0	0-0	0	0-0	0	....
1915	62-6	154	1-12	10	2-0	7	11-2	32	4-14	13	15-14	38	20-8	43	3-15	7	2-5	4	0-0	0	0-0	0	....
Average	**18.3**	**43**	**0.8**	**4**	**1.3**	**4**	**2.7**	**8**	**1.9**	**5**	**4.3**	**10**	**5.4**	**11**	**1.0**	**2**	**1.1**	**2**	**0.7**	**1**	**0**	**0**	....
Cull fruits—																							
1910	0-0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1911	1-8	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1912	3-2	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	4-3	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	1-0	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	4-10	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**2.4**	**7**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Total crop—																							
1910	42- 4	88	0- 0	0	1-12	6	0-10	2	2- 2	6	9- 0	21	8- 1	**17**	10- 0	19	5-12	10	3- 2	5	1-13	2	....
1911	81- 1	131	0- 0	0	0- 0	0	0- 0	0	2-15	7	6- 6	13	15- 1	28	2-12	5	21- 7	34	21- 6	30	9-10	11	....
1912	51- 7	117	1- 2	4	2- 6	7	2-12	7	8-14	21	8-11	18	9- 9	28	4- 0	7	8- 1	13	2-14	4	0- 0	0	4
1913	24- 3	69	1-11	7	2-10	9	2- 2	6	5-14	15	3- 9	8	3- 0	6	1- 2	2	0- 0	0	0- 0	0	0- 0	0	0
1914	33- 3	69	0- 9	3	0-10	2	2- 0	5	2- 8	6	10-13	23	8-12	16	6- 4	10	0- 0	0	0-11	1	0- 0	0	0
1915	102-13	243	1-12	10	2- 0	7	11-13	34	6-12	18	28-10	67	34- 0	71	7-13	14	4- 1	7	0- 0	0	1- 6	2	8
Average	**55.8**	**119**	**0.8**	**4**	**1.6**	**5**	**3.2**	**9**	**4.8**	**12**	**11.2**	**25**	**13.1**	**28**	**5.3**	**9**	**6.6**	**11**	**4.7**	**7**	**2.1**	**3**	**2**

The following notes regarding some of the methods of compiling Table III may assist the reader in understanding it.

During the season of 1910 when these investigations were begun, the fruit of the several sizes was not separated into the Orchard and Standard grades and no record of the fruit of the Cull grade was made in securing the data, but in determining the average annual production of cull fruit the 6-year period was used as a basis, so that the results would be comparable with the averages for the other grades and the total crop.

Variable fruits were first recorded during the season of 1912. In succeeding years the observers gradually became familiar with an increasing number of forms of such variations and recorded them as they were observed. This accounts for the general increase from year to year in the number of such fruits recorded in these lists. This increase in the number of variable forms observed and recorded results in a lower average than would have been the case if all the forms had been recognized and recorded for the entire period of the investigation.

In expressing the averages of weights in these tables it was found impracticable to retain more than one decimal. The exact decimal expression of ounces as a fractional part of a pound extends to four places, but only one decimal place has been retained. In expressing the averages for the number of fruits occurring in different groups, no decimal has been retained except when the average number is less than unity. Hence, it will be found that the totals of averages will sometimes vary slightly from the average of the totals of the corresponding numbers.

The fruits of the Cull grade are not assorted into sizes, and on this account the total figures for the weights and numbers of fruits of the various sizes represent only the commercial crops of the trees.

A very heavy freeze occurred over most of the citrus sections of southern California in the winter of 1912–13, resulting in more or less injury to the foliage or trees in many groves. In nearly all localities many mature fruits on the trees were frozen, so that they became partly dry and hollow. Where it was possible to distinguish the frozen fruits from the sound ones they were assorted into the Cull grade, which accounts for the large number of cull fruits in the records of many of the trees for the year 1913.

In order to show the method of interpreting these individual-tree performance records and of applying the knowledge gained from them, the following discussion is presented of the data recorded from representative high and low producing trees of the Washington strain.

The records of tree No. 7: 2–37–1, listed in rank 11 in Tables II and III, show it to have produced an annual crop during the 6-year period averaging 298.8 pounds, and except for the reduced yield in the year of the freeze it produced a fairly uniform quantity each season after the increase in 1911. Contrasted with this record is the annual average yield of 100.8 pounds produced by tree 7: 1–68–13, listed in rank 136 in the same tables. This tree also shows a fairly uniform crop throughout the periods, but with a reduced yield during the last two seasons.

It will be noticed that while the weight of the average crop of the tree ranked No. 11 is practically three times that of the other tree, the average number of fruits produced is only slightly more than twice as many. A determination of the average weight per fruit gives comparative results of 0.5 and 0.35 pound. The most desirable commercial sizes of the Washington Navel oranges are those which pack 126, 150, 176, and 200 to the box, the highest prices usually being received for the 126 and 150 sizes. A fruit weighing 0.5 pound is generally of the 150 size, while one weighing 0.35 pound is about size 200. An inspection of the number of fruits of the various sizes borne by the two trees shows that the tree ranked No. 11 had more of the 150 size than of any other, while the other tree produced the largest number of the 200 size. Comparing the number of fruits of the 126, 150, 176, and 200 sizes produced by the two trees, we find that the highest producing tree bore approximately 63 per cent of these desirable sizes, while the other tree had only 45 per cent of the same sizes.

A comparison of the relative proportions of high-grade fruit produced by these trees shows again the superior value of the high-producing tree, for it had 82.6 per cent of the Orchard grade, or first-grade, fruit, while the other tree had only 78.2 per cent of this grade. The number of variable fruits found on these trees was very small, being only 0.43 per cent of the total number of fruits in the case of the high-producing tree and 0.42 per cent on the other tree.

It will be seen that this and similar high-producing trees are of superior value, not only on account of their high production, but also because of their large proportion of fruit of the most desirable sizes and their high percentage of first-grade fruit. These conditions also make such trees of special value to the propagator as sources of bud wood for nursery propagation or for rebudding older trees of undesirable strains.

In Table IV are given the average total crops of the 481 trees in the record plats on which data have been secured for four successive years, and in Table V are presented the annual detailed performance records of 64 representative trees from this list. These tables are similar in character to Tables II and III, but they present data for a 4-year instead of a 6-year period. The trees listed in Table V were chosen on the same basis as those in Table III, but in order to reduce the length of the table it was necessary to omit some of the trees of the Thomson, Golden Nugget, and Yellow Washington strains.

TABLE IV.—*Summarized statement of the average annual production of 481 Washington Navel orange trees for which detailed performance records were obtained for four years, 1912 to 1915, inclusive.*

[Detailed performance records of the trees marked with an asterisk (*) are shown in Table V. The strain to which each tree belongs is shown by abbreviations, as follows: A=Australian, GN=Golden Nugget, ST=Sporting Thomson, SW=Sporting Washington, T=Thomson, TW=Thomson-Washington, U=Unproductive, W=Washington, Wr=Wrinkled, WrA=Wrinkled Australian, WT=Washington-Thomson, YT=Yellow Thomson, YW=Yellow Washington.]

Rank.	Strain.	Tree designation.	Annual crop production, 4-year average.				Rank.	Strain.	Tree designation.	Annual crop production, 4-year average.			
			Weight.	Number.	Orchard grade.	Variable fruits.				Weight.	Number.	Orchard grade.	Variable fruits.
			Lbs.		*P. ct.*	*P. ct.*				*Lbs.*		*P. ct.*	*P. ct.*
1	W...	*3-14-27	412.5	850	77.7	0.51	67	W...	4-26-13	263.8	603	78.5	1.08
2	W...	*3-12-28	410.9	1,036	76.0	.72	68	W...	SM- 3-25-12	262.9	704	77.4	.71
3	W...	11-52-13	406.7	945	84.1	.67	69	W...	9- 3- 4	262.8	566	80.5	1.06
4	W...	*11-52-15	388.5	905	83.4	.55	70	T....	5-38- 4	262.2	741	80.6	2.74
5	W...	*3-13-29	369.9	815	76.5	1.14	71	W...	10: 1-31- 4	260.4	577	79.5	.57
6	W...	*3-13-28	361.6	861	76.6	.70	72	W...	9- 6- 4	260.2	601	79.6	.58
7	W...	*3-23-27	349.8	874	77.9	.77	73	W...	*10: 1-31-10	260.1	597	75.9	.83
8	W...	3-12-29	348.3	788	77.8	.80	74	T....	5-37- 7	259.4	714	84.7	.49
9	W...	11-52-14	346.0	795	83.3	.88	75	W...	4-19-33	259.4	585	69.8	.94
10	W...	*3-12-30	338.5	721	73.1	.87	76	W...	10: 1-29-10	258.9	604	81.7	.41
11	W...	3-14-26	336.3	744	81.7	1.08	77	W...	7: 1-52-22	258.1	618	80.4	.61
12	GN..	*8-16-20	333.7	784	60.0	4.72	78	W...	10: 1-28- 6	256.6	562	83.1	.98
13	W...	*7:2-34- 2	326.7	742	75.1	.65	79	W...	10: 1-29- 3	256.6	584	80.9	.68
14	W...	3-22-27	323.2	762	80.3	.70	80	W...	10: 1-29-12	255.9	577	80.0	1.04
15	W...	11-52-12	321.8	784	84.1	1.15	81	W...	10: 1-28-12	255.8	614	83.3	.73
16	W...	*4-27-16	320.3	681	76.3	.73	82	W...	7: 1-57-10	254.9	644	82.9	.36
17	W...	7: 2-37- 1	312.4	647	78.8	.43	83	T....	5-41- 3	254.5	679	86.6	.44
18	W...	*7: 2-25- 1	309.2	686	80.6	.73	84	W...	4-18-19	254.3	604	71.3	.30
19	W...	10: 1-28- 9	307.7	852	80.9	.41	85	W...	7: 2-30- 3	254.2	584	82.8	.65
20	W...	3-13-25	304.8	661	77.8	.53	86	W...	SM- 3-30-17	253.6	713	81.0	1.26
21	W...	3-14-23	303.3	622	81.3	.56	87	W...	4-23- 2	253.2	525	81.0	.48
22	TW.	*5-41- 7	303.1	820	82.8	.46	88	W...	6: 1-58- 1	253.2	662	83.0	.38
23	W...	10: 1-29- 2	301.9	768	76.4	.59	89	TW.	5-39- 6	252.9	666	85.0	1.05
24	W...	*7: 2-30- 1	301.8	688	78.2	.65	90	W...	10: 1-28- 5	252.8	565	84.7	.94
25	W...	*7: 2-32- 3	289.5	676	73.1	.41	91	W...	7: 1-52-16	252.5	669	85.0	.19
26	T....	*5-36- 1	287.6	754	75.7	3.25	92	W...	4-23- 4	252.2	517	75.6	.68
27	W...	10: 1-29- 8	287.4	614	76.6	.98	93	W...	10: 1-32- 3	251.2	550	81.5	.42
28	W...	3-14-25	287.0	590	80.2	.98	94	T....	5-42- 7	251.2	572	88.5	1.57
29	W...	5-40- 4	286.6	825	84.9	1.61	95	T....	*5-41-17	251.1	743	84.3	1.18
30	TW.	5-41- 6	285.6	900	83.6	2.48	96	W...	10: 1-30- 7	250.5	545	75.8	.79
31	W...	10: 1-32- 6	285.0	652	81.9	.35	97	W...	*9- 4- 3	249.7	608	75.6	1.04
32	T....	5-40- 5	284.5	765	87.7	.78	98	T....	5-39- 4	249.3	780	87.2	1.22
33	W...	4-23- 3	281.4	602	78.8	.80	99	W...	3-17- 4	249.0	576	75.7	.57
34	W...	*9- 2- 5	280.7	631	84.5	.63	100	W...	7: 1-52-15	248.6	675	83.6	.19
35	W...	7: 2- 8- 1	279.1	591	82.0	.30	101	W...	10: 1-30- 2	248.3	576	81.8	1.79
36	W...	7: 2-17- 2	279.0	684	83.0	.56	102	W...	3-13- 4	247.3	532	77.8	.62
37	T....	5-38- 6	278.2	762	82.8	1.02	103	W...	10: 1-29- 7	246.5	587	81.3	.82
38	W...	7: 1-59-11	277.6	693	83.5	.26	104	W...	4-28-15	246.5	611	76.6	.38
39	W...	7: 2-25- 3	277.2	628	80.2	.29	105	W...	SM- 3-28-14	246.4	634	74.9	1.50
40	W...	10: 1-30- 9	275.8	582	80.9	2.23	106	T....	5-36- 7	246.1	661	82.8	.53
41	T....	5-42- 5	274.4	787	87.7	1.14	107	W...	10: 1-28-10	246.0	593	81.6	.59
42	W...	10: 1-30- 3	273.5	630	84.7	.31	108	ST..	*5-40- 2	245.0	730	76.9	7.30
43	W...	10: 1-28- 8	273.5	672	79.2	.45	109	W...	10: 1-32- 7	244.9	553	77.5	.87
44	T....	5-37- 3	273.4	766	82.2	1.24	110	T....	5-32- 5	244.9	698	70.9	1.19
45	W...	7: 2- 2- 1	273.1	625	80.3	.37	111	W...	10: 1-28- 4	244.7	556	81.4	.95
46	W...	7: 2-31- 1	273.1	638	77.8	.28	112	W...	SM- 3-24-15	244.6	692	72.3	.29
47	W...	7: 2-32- 1	272.9	593	84.8	.51	113	T....	5-41- 5	244.1	711	84.3	.49
48	W...	10: 1-31- 5	272.5	575	80.5	.52	114	T....	5-36- 6	243.2	680	79.3	.51
49	W...	10: 1-31- 7	272.5	641	76.3	.67	115	W...	7: 2-32- 4	242.0	508	77.8	1.14
50	W...	3-13-27	272.0	757	74.2	.58	116	W...	10: 1-32-11	242.0	530	84.5	.72
51	W...	10: 1-32-10	271.9	615	79.3	.41	117	W...	10: 1-31- 1	241.8	558	81.4	.68
52	T....	5-42- 2	271.6	800	81.2	5.63	118	W...	SM- 3-29-12	241.4	645	77.0	.78
53	W...	9- 2- 2	271.5	605	81.3	.96	119	T....	5-36- 4	241.3	697	82.1	.86
54	T....	*5-42- 3	271.5	779	83.8	1.22	120	W...	7: 1-57-15	240.7	620	84.3	.85
55	W...	7: 2-31- 2	271.1	625	83.1	.96	121	W...	10: 1-31- 6	240.4	529	81.8	.81
56	W...	10: 1-32- 9	270.3	637	80.5	.16	122	W...	9- 4- 6	240.4	529	80.4	1.38
57	W...	*9- 3- 6	269.9	648	83.8	.46	123	W...	*9- 5- 5	240.1	519	77.0	.64
58	W...	4-28-14	269.7	634	78.1	.60	124	W...	10: 1-29-11	240.1	646	84.0	.46
59	W...	SM- 3-26-14	269.2	668	78.6	.37	125	T....	5-40- 7	239.9	657	81.0	.81
60	W...	11-52-16	269.1	665	84.8	.49	126	W...	7: 2-30- 2	239.1	546	82.9	.27
61	W...	7: 1-52-20	265.8	700	80.3	.04	127	T....	5-39- 3	239.0	689	83.6	4.76
62	W...	10: 1-32- 4	265.4	580	79.5	.60	128	W...	7: 2-17- 1	238.9	563	79.5	.36
63	T....	5-38- 2	264.6	749	83.9	.53	129	W...	9- 2- 4	237.8	550	83.5	.91
64	W...	SM- 3-27-13	264.5	749	79.1	.47	130	T....	5-36- 5	237.7	673	81.6	3.31
65	W...	3-20-27	264.3	578	80.9	.78	131	W...	10: 1-32-12	237.4	526	76.3	.38
66	YT..	*5-29- 2	264.3	913	65.8	1.57	132	W...	9- 2- 6	237.4	590	80.7	.76

TABLE IV.—*Summarized statement of the average annual production of 481 Washington Navel orange trees for which detailed performance records were obtained for four years, 1912 to 1915, inclusive*—Continued.

Rank.	Strain.	Tree designation.	Annual crop production, 4-year average.				Rank.	Strain.	Tree designation.	Annual crop production, 4-year average.			
			Weight.	Number.	Orchard grade.	Variable fruits.				Weight.	Number.	Orchard grade.	Variable fruits.
			Lbs.		*P. ct.*	*P. ct.*				*Lbs.*		*P. ct.*	*P. ct.*
133	W...	SM- 3-28-15	237.4	635	73.3	0.24	205	W...	10: 1-32- 5	215.8	457	82.0	0.39
134	T....	5-36-11	237.3	650	80.1	1.05	206	W...	7: 2-30- 4	215.1	469	82.0	.53
135	W...	10: 1-29- 6	237.3	502	77.2	.50	207	W...	7: 2-25- 2	214.9	488	79.7	.61
136	W...	9- 5- 3	235.2	553	83.3	1.14	208	W...	SM- 3-32-16	214.7	558	77.3	1.08
137	T....	5-39- 2	234.7	633	85.0	.71	209	GN..	8-18-18	214.5	425	62.7	9.88
138	W...	SM- 3-24-12	234.4	647	77.6	.93	210	W...	9- 5- 4	214.5	516	78.2	.87
139	W...	4-22- 3	234.3	496	81.9	.77	211	W...	SM- 3-29-20	213.9	594	84.9	.59
140	W...	7: 2-18- 1	234.0	549	77.1	.51	212	W...	3-13-26	213.7	475	75.7	.48
141	W...	SM- 3-28-13	234.0	612	76.2	.25	213	W...	4-30- 6	213.2	451	77.5	2.39
142	W...	10: 1-31- 2	233.5	502	78.7	.56	214	W...	10: 1-32- 8	212.4	474	79.0	2.38
143	W...	SM- 3-26-12	233.5	563	76.7	.27	215	T....	5-36- 2	212.4	562	81.3	1.47
144	W...	10: 1-29- 4	233.4	477	77.7	1.53	216	W...	SM- 3-25-13	212.1	607	78.3	.25
145	W...	SM- 3-27-12	233.4	603	73.7	.50	217	W...	10: 1-31- 3	212.0	452	81.3	.76
146	T....	5-36- 3	232.9	676	77.4	.71	218	W...	10: 1-29- 1	212.0	484	81.7	1.20
147	W...	10: 1-28- 2	232.8	516	79.7	.39	219	W...	9- 3- 3	211.6	475	80.8	.70
148	W...	7: 1-56-14	232.7	574	83.4	.49	220	W...	7: 2- 8- 2	211.2	544	86.3	.42
149	T....	5-37- 5	232.6	664	82.8	.35	221	W...	7: 1-51-19	211.1	544	78.7	.28
150	W...	SM- 3-28-20	232.4	575	82.1	.70	222	W...	9- 4- 5	210.7	454	82.3	.77
151	W...	7: 2-31- 3	231.8	525	77.0	.82	223	W...	SM- 3-31-12	210.2	551	75.3	.54
152	W...	SM- 3-29-15	231.5	617	78.5	.81	224	W...	*7: 1-56-11	210.0	511	81.7	.45
153	W...	SM- 3-31-13	230.9	624	76.5	.08	225	W...	10: 1-31- 8	209.5	453	79.6	.84
154	W...	10: 1-28- 3	230.8	533	77.7	.66	226	W...	3-12-27	208.9	552	66.6	2.05
155	T....	*5-41- 4	230.6	645	85.6	.31	227	T....	5-40- 6	208.6	648	86.7	.93
156	W...	*4-18-18	229.6	520	75.7	.87	228	W...	7: 1-65-21	207.6	584	75.9	.51
157	W...	10: 1-28-11	229.5	548	84.4	1.24	229	W...	SM- 3-25-14	207.1	509	77.9	.59
158	T....	5-43- 4	228.9	666	86.2	1.05	230	W...	6: 1-53- 2	206.7	555	82.0	.18
159	W...	10: 1-28- 1	228.7	517	78.7	.97	231	W...	5-34- 1	206.4	574	73.6	.84
160	W...	9- 5- 2	228.7	566	80.1	1.02	232	W...	7: 2- 7- 3	205.9	476	83.9	.38
161	TW .	5-42- 6	227.4	688	84.8	.73	233	W...	9- 6- 2	205.9	496	86.6	.81
162	W...	3-14- 4	227.0	470	82.2	2.09	234	W...	7: 1-65-22	205.2	618	75.2	.53
163	W...	4-19-32	227.0	551	72.3	.51	235	W...	4-29- 6	204.6	426	74.1	1.64
164	W...	10: 1-30- 8	226.7	507	79.7	1.35	236	W...	10: 1-30- 4	204.1	437	78.8	.57
165	W...	SM- 3-27-14	226.4	633	77.2	.87	237	W...	7: 2- 1- 4	204.1	446	78.1	.34
166	T....	5-40- 3	226.3	657	85.8	.65	238	W...	7: 2- 2- 3	203.7	446	82.4	.78
167	W...	7: 1-53- 1	226.0	540	79.5.	.74	239	W...	SM- 3-29-17	203.2	505	77.7	.68
168	W...	10 : 1-30- 5	225.9	433	83.6	1.15	240	W...	SM- 3-27-19	202.5	509	79.8	.42
169	W...	10 : 1-30- 1	225.9	534	81.1	.34	241	T....	5-32- 3	202.5	640	69.0	1.95
170	W...	4-29-13	225.1	545	75.2	.55	242	W...	7: 2- 1- 3	202.3	454	80.2	.18
171	W...	SM- 3-28-12	224.8	604	74.4	.83	243	W...	SM-3-27-16	202.2	496	75.1	1.21
172	W...	7: 1-52-17	224.7	540	81.3	.09	244	W...	SM-3-26-19	202.0	523	82.7	.29
173	W...	7: 2-25- 5	224.4	499	78.3	.50	245	W...	4-22-29	200.9	434	68.4	.57
174	T....	5-43- 3	224.4	625	81.4	4.77	246	W...	9- 4- 4	200.4	472	78.7	1.27
175	W...	7: 2- 1- 2	223.9	542	78.6	1.11	247	T....	*5-37- 6	199.9	611	83.7	.57
176	T....	5-38- 7	223.9	628	76.5	3.55	248	W...	*7:1-50-16	199.8	545	82.0	.24
177	T....	5-38- 5	223.8	660	84.5	1.18	249	GN..	*5-16-21	199.4	514	68.3	1.85
178	W...	4-32- 4	223.2	537	74.2	1.03	250	W...	3-14-24	199.3	403	80.8	.74
179	W...	7: 2-32- 5	222.7	474	81.8	.59	251	W...	6: 1-75- 1	198.5	530	80.1	.25
180	W...	9- 3- 2	222.3	547	80.8	.42	252	W...	7: 1-55-12	198.3	499	80.6	.56
181	W...	SM- 3-29-14	222.0	612	79.3	.65	253	W...	4-31- 2	198.1	449	69.8	.78
182	T....	5-41- 2	222.0	618	86.1	.86	254	W...	7: 2- 2- 2	198.0	490	80.5	.78
183	W...	10: 1-31-11	221.5	527	78.3	.91	255	W...	4-21-31	197.2	437	72.9	.57
184	W...	SM- 3-31-17	220.7	542	76.5	1.29	256	W...	4-22- 5	196.5	402	78.4	.95
185	W...	*10: 1-73- 3	220.2	554	75.0	.14	257	W...	SM- 3-24-19	195.6	488	74.6	.21
186	W...	7 : 2-31- 4	219.6	466	78.6	.64	258	W...	SM- 3-28-17	195.2	520	78.8	3.08
187	W...	10: 1-32- 2	219.6	479	80.4	.69	259	W...	10: 1-30-12	195.1	446	78.0	.96
188	W...	10: 1-32- 1	219.6	502	79.3	.56	260	W...	9- 6- 3	194.8	428	85.9	.42
189	W...	SM- 3-30-18	219.3	527	77.3	.57	261	W...	SM- 3-27-17	194.2	507	77.7	.61
190	W...	7 : 2-26- 5	219.1	519	80.2	.73	262	W...	7: 1-51-16	194.1	554	82.7	.23
191	W...	7 : 2- 1- 1	219.0	489	79.5	.71	263	W...	10: 1-30-16	193.1	410	79.3	.75
192	W...	7 : 2- 7- 2	218.4	545	84.7	.42	264	W...	9- 1- 2	193.0	426	77.5	.77
193	W...	9- 4- 2	218.3	523	76.5	.57	265	W...	7: 1-61-11	192.4	505	80.7	.18
194	W...	3-21-28	218.1	453	80.0	2.20	266	T....	5-36-13	192.2	539	68.4	11.28
195	ST..	5-32- 4	218.0	667	63.8	13.01	267	W...	6: 1-70- 9	192.0	481	80.5	.21
196	W...	10: 1-31- 9	217.7	452	78.8	1.24	268	W...	10: 1-29- 5	190.8	426	81.3	.47
197	W...	7: 2- 7- 1	217.0	536	77.2	.47	269	W...	*7: 2- 1- 5	190.7	489	81.0	.71
198	W...	7: 1-53-15	216.9	526	86.7	.48	270	GN..	*8-16-24	189.2	401	58.2	5.74
199	W...	3-17- 3	216.5	497	77.3	.91	271	W...	SM- 3-27-15	188.8	524	68.6	.19
200	W...	10: 1-31-12	216.3	482	80.8	.52	272	W...	SM- 3-30-14	188.5	492	77.3	1.12
201	W...	4-21-30	216.3	481	74.6	.27	273	T....	5-39- 5	188.5	613	79.0	5.84
202	G.N.	*8-17-21	216.1	467	62.9	7.18	274	W...	SM- 3-30-19	188.4	468	79.7	.64
203	W...	7:1-60-11	216.0	562	84.2	.45	275	T....	5-39- 7	188.4	518	82.3	6.04
204	T....	5-43- 6	216.0	601	80.7	4.68	276	W...	10: 1-29- 9	187.7	394	81.4	.38
							277	W...	4-23-28	187.5	431	70.1	.93

TABLE IV.—*Summarized statement of the average annual production of 481 Washington Navel orange trees for which detailed performance records were obtained for four years, 1912 to 1915, inclusive*—Continued.

Rank.	Strain.	Tree designation.	Annual crop production, 4-year average.				Rank.	Strain.	Tree designation.	Annual crop production, 4-year average.			
			Weight.	Number.	Orchard grade.	Variable fruits.				Weight.	Number.	Orchard grade.	Variable fruits.
			Lbs.		P. ct.	P. ct.				Lbs.		P. ct.	P. ct.
278	W...	7: 2-26- 3	186.2	411	79.3	0.80	350	W...	7: 2-25- 4	158.7	345	77.3	0.38
279	W...	3-16- 3	186.1	424	77.3	.35	351	W...	7: 2-26- 1	157.9	351	74.5	.71
280	W...	9- 5- 6	185.8	452	76.4	.66	352	YW.	SM- 3-28-19	157.7	384	73.4	1.04
281	W...	6: 1-71- 9	185.5	480	83.9	.21	353	W...	9- 6- 6	157.4	347	76.7	.58
282	W...	10: 1-28- 7	184.9	384	79.8	1.51	354	W...	SM- 3-31-15	155.2	416	72.2	.84
283	W...	4-17-34	184.3	383	70.1	.99	355	W...	7: 1-69-12	155.2	491	77.4	1.08
284	W...	7: 2- 2- 5	184.3	422	86.1	.59	356	W...	7: 1-51-17	154.5	389	84.9	.08
285	W...	4-17-33	184.2	394	74.3	.38	357	W...	SM- 3-26-15	154.2	371	77.8	.94
286	W...	SM- 3-29-19	184.2	520	83.9	.19	358	W...	7: 1-69- 8	154.0	481	77.4	.83
287	W...	V- 3-14- 3	182.9	397	81.5	9.32	359	W...	7: 2- 2- 4	153.9	397	80.9	.76
288	W...	SM- 3-31-21	181.9	455	82.5	.66	360	W...	SM- 3-27-18	153.6	401	76.6	.13
289	W...	SM- 3-30-13	181.5	458	74.3	.52	361	W...	7: 1-65- 6	153.6	430	74.7	.46
290	W...	SM- 3-29-18	181.5	544	80.7	.09	362	W...	7: 1-53-14	153.5	381	84.0	.97
291	W...	7: 1-55-11	180.7	405	80.9	.32	363	W...	SM- 3-32-13	153.4	388	73.7	.39
292	W...	SM- 3-24-14	180.6	498	78.3	.40	364	W...	6: 1-70- 8	152.2	388	79.2	1.55
293	W...	*7: 2-26- 4	180.3	425	83.4	.35	365	YW.	SM- 3-26-17	152.0	377	78.8	1.20
294	W...	4-16- 4	179.7	428	72.0	.42	366	W...	7: 1-57-11	150.9	367	83.5	.41
295	W...	4-22- 4	179.6	350	79.8	.71	367	W...	7: 1-65- 7	150.7	420	76.8	.48
296	W...	10: 2- 7-13	178.4	427	71.3	.35	368	W...	7: 1-69-13	150.7	434	81.4	.23
297	W...	3-18- 3	178.2	423	79.5	.66	369	W...	4- 3- 6	150.4	288	72.3	.54
298	W...	4-30- 5	177.3	376	72.6	1.33	370	W...	4-31- 3	150.4	355	65.8	1.92
299	W...	7: 1-56-12	176.4	486	76.6	1.39	371	WT.	*5-38- 3	150.4	424	85.6	.90
300	W...	3-16- 4	176.3	389	79.6	.39	372	W...	*7: 1-52-19	150.0	362	76.7	.55
301	W...	3-13- 3	175.9	419	77.9	.48	373	W...	4- 3- 5	149.1	321	74.4	.31
302	W...	SM- 3-25-19	175.9	437	74.4	.80	374	W...	4-32- 3	148.8	376	73.1	.97
303	W...	V- 3-21- 1	175.7	402	76.2	1.62	375	W...	10: 2- 7-14	148.0	343	77.8	.58
304	W...	6: 1-70-10	175.6	464	77.6	1.47	376	W...	7: 1-66-11	147.0	423	72.0	.31
305	W...	V- 3-18- 4	175.3	411	76.0	1.53	377	W...	4-18- 1	146.7	288	73.5	1.32
306	W...	SM- 3-26-18	174.8	446	79.6	.45	378	W...	9- 3- 5	146.7	300	81.9	2.10
307	W...	SM- 3-26-21	174.3	399	78.0	1.13	379	W...	7: 1-65-14	146.6	395	79.1	.96
308	W...	SM- 3-24-20	173.7	466	73.5	.64	380	W...	SM- 3-25-20	145.4	403	77.6	.75
309	T....	5-43- 5	173.3	500	75.7	3.36	381	W...	SM- 3-25-15	145.0	433	76.7	.23
310	T....	5-43- 8	173.1	473	81.9	3.17	382	W...	7: 1-65-15	144.2	398	78.9	.45
311	W...	7: 1-56- 4	172.9	423	87.5	.31	383	W...	6: 1-64- 4	144.1	368	84.7	.49
312	W...	SM- 3-24-18	172.8	400	76.6	.62	384	W...	SM- 3-29-13	144.1	368	75.0	2.31
313	W...	5-41-16	172.5	477	83.8	.42	385	W...	7: 2-31- 5	143.8	325	78.7	.56
314	W...	3-21-29	172.4	360	71.3	1.89	386	W...	SM- 3-33-17	143.4	321	74.4	2.19
315	W...	7: 1-65-10	172.3	457	75.6	1.09	387	W...	SM- 3-32-12	143.3	344	70.1	.15
316	W...	7: 1-69-11	272.2	504	81.8	.45	388	GN..	5-16-19	142.4	327	71.2	.76
317	W...	SM- 3-28-21	171.5	455	79.9	.44	389	W...	7: 1-66-13	142.2	384	75.9	1.17
318	W...	*SM- 3-32-14	170.3	436	72.9	.92	390	W...	4-22-28	141.6	323	65.5	.93
319	W...	SM- 3-26-20	169.7	429	82.0	.47	391	GN..	*5-17-23	140.7	427	60.6	1.05
320	W...	7: 1-65-13	169.7	484	74.2	.41	392	SW..	*10: 1-73- 2	140.0	351	36.8	49.52
321	W...	7: 2-26- 2	169.6	388	81.8	.46	393	W...	*9- 6- 5	139.8	312	81.9	1.92
322	W...	7: 1-65- 8	169.5	490	80.3	.41	394	T....	5-42- 4	137.7	429	77.3	4.15
323	W...	SM- 3-28-18	169.2	441	73.9	.45	395	W...	SM- 3-27-21	136.8	350	80.3	1.43
324	W...	9- 2- 3	169.1	372	86.0	.94	396	W...	7: 1-66- 9	136.1	398	70.8	.58
325	W...	4-31- 4	169.0	372	77.0	.75	397	W...	7: 1-69-10	136.1	416	79.2	.96
326	W...	SM- 3-26-16	167.1	402	78.7	.12	398	W...	SM- 3-24-16	135.6	388	76.4	2.71
327	T....	5-37- 2	166.4	457	80.8	.51	399	W...	SM- 3-24-21	135.3	344	75.2	1.74
328	W...	7: 1-53-13	166.1	394	85.6	.38	400	YW.	*3-31-19	135.1	312	77.1	1.12
329	W...	SM- 3-28-16	166.1	431	77.7	1.04	401	W...	7: 1-69-14	134.5	378	75.8	.40
330	W...	6: 1-69- 9	165.7	434	76.6	.18	402	YW.	SM- 3-31-16	134.3	314	73.2	.48
331	T....	5-37- 4	165.6	490	82.9	.82	403	W...	6: 1-70- 7	134.3	356	80.7	1.26
332	W...	7: 2-30- 5	165.1	356	80.0	.65	404	T...	*5-44- 8	133.8	460	80.6	1.15
333	W...	10: 1-30-11	164.7	399	81.1	1.70	405	W...	7: 1-65-11	131.8	366	77.8	.68
334	W...	6: 1-43- 5	163.5	458	85.1	.50	406	W...	7: 1-69-16	131.7	353	77.4	.71
335	W...	7: 1-69-17	163.3	449	75.3	.74	407	W...	7: 1-65- 9	130.9	381	78.3	.34
336	T....	5-34- 2	162.9	617	68.7	1.35	408	W...	*7: 1-69-15	130.0	373	75.4	.27
337	W...	V- 3-15- 4	162.5	382	79.4	.47	409	W...	7: 1-66-15	127.4	348	79.7	.81
338	W...	SM- 3-26-13	162.4	439	81.0	.34	410	W...	7: 1-65-12	127.1	360	80.5	.69
339	WrA	*7: 1-56-10	162.1	471	29.4	55.90	411	W...	3-15- 3	127.0	293	81.1	.68
340	W...	4-17-16	161.5	323	71.5	.62	412	WrA	*7: 1-56- 5	126.0	373	29.4	56.25
341	W...	7: 1-69- 6	161.5	489	72.1	.37	413	W...	SM- 3-30-12	122.0	341	76.6	.59
342	T....	*5-43- 7	161.4	604	77.8	1.21	414	W...	7: 1-66-14	121.7	369	77.1	.68
343	W...	7: 1-51-18	161.3	449	78.0	1.34	415	W...	7: 1-69- 9	121.7	387	71.5	1.16
344	W...	*4-20-33	160.1	336	69.1	.74	416	W...	7: 2-37- 2	121.0	257	76.3	.12
345	W...	SM- 3-24-13	159.9	409	77.2	.24	417	W...	SM- 3-24-17	120.6	279	74.3	.54
346	W...	7: 1-50-18	159.8	394	82.7	.25	418	YW.	*SM- 3-29-21	119.8	281	78.7	.89
347	YW.	*SM- 3-27-20	159.6	394	77.4	.63	419	W...	*7: 1-69- 7	119.7	370	68.7	1.03
348	GN..	5-15-21	159.5	401	73.9	1.12	420	U...	*6: 1-54- 2	119.4	309	74.8	.97
349	W...	4-20-32	159.2	417	72.4	.48	421	W...	SM- 3-33-16	119.0	281	80.1	1.42

TABLE IV.—*Summarized statement of the average annual production of 481 Washington Navel orange trees for which detailed performance records were obtained for four years, 1912 to 1915, inclusive*—Continued.

Rank.	Strain.	Tree designation.	Annual crop production, 4-year average.				Rank.	Strain.	Tree designation.	Annual crop production, 4-year average.			
			Weight.	Number.	Orchard grade.	Variable fruits.				Weight.	Number.	Orchard grade.	Variable fruits.
			Lbs.		*P. ct.*	*P. ct.*				*Lbs.*		*P. ct.*	*P. ct.*
422	W...	SM- 3-31-20	118.3	342	81.0	0.88	452	U...	SM- 3-33-13	93.6	210	76.6	0
423	W...	7: 1-66- 7	117.6	329	77.0	.61	453	U...	10: 2- 6-12	93.1	210	72.7	.62
424	W...	SM- 3-25-21	117.2	293	77.1	1.88	454	U...	SM- 3-33-14	93.1	226	73.4	.22
425	W...	7: 1-67-11	117.2	359	80.7	.36	455	YW.	SM- 3-25-16	92.2	238	73.2	.84
426	W...	7: 1-66- 6	116.3	346	69.3	.87	456	U...	*7: 1-67- 8	91.5	294	73.0	.51
427	W...	7: 1-68-11	116.1	350	71.5	.80	457	YW.	*SM- 3-32-17	89.2	203	66.3	.98
428	W...	7: 1-68-15	114.8	320	77.2	1.34	458	U...	10: 2- 8-14	87.8	232	70.6	.13
429	W...	7: 1-52-18	114.2	308	83.9	.81	459	U...	7: 1-67- 9	87.8	279	66.2	3.05
430	W...	7: 1-67-14	111.9	338	79.4	.53	460	U...	10: 2- 6-13	87.5	211	64.3	1.33
431	W...	7: 1-67-15	111.8	338	75.3	.68	461	U...	7: 1-51-20	87.2	202	79.2	.25
432	W...	7: 1-67-10	111.4	350	74.7	.37	462	U...	7: 1-67- 6	85.8	273	79.5	1.28
433	W...	*10- 2- 8- 6	110.4	267	75.9	.11	463	U...	SM- 3-33-12	84.6	200	75.6	1.25
434	YW.	SM- 3-31-18	108.5	267	73.1	2.62	464	U...	7: 1-68- 8	81.1	241	67.7	.33
435	W...	6: 1-71- 8	107.1	289	81.1	.62	465	U...	*6: 1-64- 3	80.3	169	80.4	.59
436	U...	*7: 1-68- 7	107.1	351	69.1	.57	466	U...	SM- 3-33-15	78.4	201	73.5	.95
437	W...	4-32- 2	106.5	278	71.0	.36	467	U...	7: 1-68-14	76.9	247	67.1	.61
438	W...	7: 1-66- 8	106.4	344	70.1	.38	468	U...	6: 1-71- 7	76.8	197	75.5	1.67
439	YW.	SM- 3-30-16	105.2	252	74.7	.20	469	U...	7: 1-68-12	76.4	245	71.3	.53
440	W...	6: 1-69-10	105.0	255	81.9	3.84	470	U...	7: 1-66-10	76.0	214	67.5	.14
441	YW.	*SM- 3-25-18	104.7	262	77.3	.95	471	YW.	SM- 3-32-20	75.7	157	74.8	1.27
442	W...	7: 1-68-13	102.8	313	75.0	.41	472	U....	SM- 3-29-16	75.3	130	68.9	.77
443	W...	SM- 3-30-15	101.9	300	78.6	1.66	473	U...	6: 1-71-10	75.2	229	66.6	.13
444	W...	*7: 1-68- 6	101.2	321	69.4	1.03	474	U...	7: 1-66-12	74.6	215	58.6	2.33
445	U...	SM- 3-31-14	100.7	270	76.3	.56	475	U...	*7: 1-65-23	73.3	213	72.2	1.17
446	U...	*7: 1-68- 9	100.0	343	68.8	1.31	476	U...	7: 1-67-13	61.4	196	76.9	.41
447	U...	7: 1-67- 7	96.2	293	72.4	.85	477	U...	*7: 1-53-11	59.8	127	74.2	1.18
448	U...	7: 1-53-12	95.7	235	70.8	.13	478	YW.	*SM- 3-32-15	56.7	136	66.3	.37
449	U...	7: 1-68-10	94.8	300	71.3	.67	479	U...	7: 1-52- 3	52.9	125	53.9	1.60
450	U...	7: 1-67-12	94.2	274	76.5	.11	480	U...	10: 2- 7-17	52.8	117	68.2	.68
451	U...	10: 2- 8-15	93.9	251	64.3	3.59	481	U...	*6: 1-55- 5	48.3	118	73.7	1.27

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV.*

[The weights of the annual production are expressed in pounds and ounces, but the fractional averages are expressed decimally in pounds.]

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
1. Washington strain:																							
Orchard grade—																							
1912	315- 0	581	1- 5	5	2- 8	8	4- 5	12	27-13	68	29- 1	64	84- 5	163	28-15	52	77-14	128	41- 0	59	17-14	22	....
1913	152-14	310	0- 4	1	0- 5	1	7- 7	23	13-10	37	25- 3	59	34-14	72	41-14	74	14-11	23	6-14	10	7-12	10	....
1914	461- 8	946	1-10	8	5- 6	19	19-14	59	51-15	133	126-10	277	125-12	238	99- 6	167	21-14	33	8- 4	11	0-13	1	....
1915	352- 2	661	0- 0	0	0- 9	2	4-12	14	16- 4	43	36- 5	85	62-13	130	120- 9	217	57-13	94	34- 5	51	18-12	25	....
Average	**320.4**	**625**	**0.8**	**3**	**2.2**	**7**	**9.1**	**27**	**27.4**	**70**	**54.3**	**121**	**76.9**	**151**	**72.7**	**128**	**43.1**	**70**	**22.6**	**33**	**11.3**	**15**	....
Standard grade—																							
1912	23-11	57	2- 0	9	1-10	5	2-11	7	4-14	12	3-10	8	5-12	11	1- 3	2	1-15	3	0- 0	0	0- 0	0	....
1913	34- 7	80	0- 3	1	1- 8	5	3-10	11	2- 0	6	7- 3	18	12- 8	26	3- 3	6	1- 2	2	3- 2	5	0- 0	0	....
1914	24- 7	58	1- 1	6	0-15	3	2-10	7	2-12	7	6-12	16	4- 9	9	4- 8	8	1- 4	2	0- 0	0	0- 0	0	....
1915	78-12	151	0- 5	2	0- 9	2	2- 5	7	2- 4	6	5- 2	13	16- 8	35	19- 2	35	15- 6	26	11-14	18	5- 5	7	....
Average	**40.3**	**86**	**0.9**	**4**	**1.1**	**4**	**2.8**	**8**	**3.0**	**8**	**5.7**	**14**	**9.8**	**20**	**7.0**	**13**	**4.9**	**8**	**3.8**	**6**	**1.3**	**2**	....
Cull fruits—																							
1912	16- 3	41	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	103-12	311	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	17- 4	38	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	69-13	165	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**51.8**	**139**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																							
1912	354-14	679	3- 5	14	4- 2	13	7- 0	19	32-11	80	32-11	72	90- 1	174	30- 2	54	79-13	131	41- 0	59	17-14	22	0
1913	291- 1	701	0- 7	2	1-13	6	11- 1	34	15-10	43	32- 6	77	47- 6	98	45- 1	80	15-13	25	10- 0	15	7-12	10	0
1914	503- 3	1,042	2-11	14	6- 5	22	22- 8	66	54-11	140	133- 6	293	130- 5	247	103-14	175	23- 2	35	8- 4	11	0-13	1	8
1915	500-11	977	0- 5	2	1- 2	4	7- 1	21	18- 8	49	41- 7	98	79- 5	165	139-11	252	73- 3	120	46- 3	69	24- 1	32	9
Average	**412.5**	**850**	**1.7**	**8**	**3.4**	**11**	**11.9**	**35**	**30.3**	**78**	**60.0**	**135**	**86.8**	**171**	**79.7**	**140**	**47.9**	**78**	**26.4**	**39**	**12.6**	**16**	**4**

2. Washington strain:																							
Orchard grade—																							
1912	317- 3	744	6-12	26	24- 5	78	29- 7	84	74- 0	186	64-12	145	74- 9	150	10- 9	20	29- 7	50	3- 6	5	0- 0	0	....
1913	225- 5	564	2- 3	10	9-11	38	30- 0	97	39-14	109	62- 6	151	42-14	90	33- 2	61	3- 2	5	1- 5	2	0-12	1	....
1914	435- 6	1,083	5- 9	26	27- 0	93	69-12	208	85- 6	224	128- 3	298	85-15	176	29-10	52	3- 4	5	0-11	1	0- 0	0	....
1915	270-14	599	0- 0	0	1- 5	5	11- 0	36	24- 7	69	62- 5	154	59-14	130	78- 3	150	19- 9	33	11-15	19	2- 4	3	....
Average	**312.2**	**748**	**3.6**	**16**	**15.6**	**54**	**35.0**	**106**	**55.9**	**147**	**79.4**	**187**	**65.8**	**137**	**37.9**	**71**	**13.8**	**23**	**4.3**	**7**	**0.8**	**1**	....
Standard grade—																							
1912	24- 2	75	8- 5	36	2-14	9	2- 9	7	3- 0	8	2-10	6	3- 0	6	1- 2	2	0-10	1	0- 0	0	0- 0	0	....
1913	69- 1	212	9- 4	46	9- 8	35	13-14	43	6- 0	17	15- 6	39	9- 2	21	3- 8	7	2- 7	4	0- 0	0	0- 0	0	....
1914	40- 6	116	4- 3	22	5-13	19	9-15	28	7- 3	18	6-15	16	5- 5	11	1- 0	2	0- 0	0	0- 0	0	0- 0	0	....
1915	141-15	326	1-15	10	3- 4	12	8-10	27	11- 3	32	20- 5	52	49- 0	107	23- 0	44	13- 3	24	10- 0	16	1- 7	2	....
Average	**68.9**	**182**	**5.9**	**29**	**5.4**	**19**	**8.8**	**26**	**6.8**	**19**	**11.3**	**28**	**16.6**	**36**	**7.2**	**14**	**4.1**	**7**	**2.5**	**4**	**0.4**	**0.5**	....
Cull fruits—																							
1912	14- 2	47	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	65- 6	251	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	8-13	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	30-14	97	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**29.8**	**106**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	355- 7	866	15- 1	62	27- 3	87	32- 0	91	77- 0	194	67- 6	151	77- 9	156	11-11	22	30- 1	51	3- 6	5	0- 0	0	0
1913	359-12	1,027	11- 7	56	19- 3	73	43-14	140	45-14	126	77-12	190	52- 0	111	36-10	68	5- 9	9	1- 5	2	0-12	1	6
1914	484- 9	1,227	9-12	48	32-13	112	79-11	236	92- 9	242	135- 2	314	91- 4	187	30-10	54	3- 4	5	0-11	1	0- 0	0	11
1915	443-11	1,022	1-15	10	4- 9	17	19-10	63	35-10	101	82-10	206	108-14	237	101- 3	194	32-12	57	21-15	35	3-11	5	15
Average	**410.9**	**1,036**	**9.6**	**44**	**20.9**	**72**	**43.8**	**133**	**62.8**	**166**	**90.7**	**215**	**82.4**	**173**	**45.0**	**85**	**17.9**	**30**	**6.9**	**11**	**1.1**	**0.2**	**8**
4. Washington strain:																							
Orchard grade—																							
1912	340- 3	783	5-10	21	19- 8	62	19-12	57	69-10	180	77- 2	178	93- 8	191	5-12	11	34- 5	60	13-10	21	1- 6	2	....
1913	254-14	589	2- 6	9	8-15	29	36-15	105	40- 1	102	72- 1	164	59- 6	119	28- 0	50	4- 5	7	2- 0	3	0-13	1	....
1914	334-15	824	4- 8	20	16-15	57	65- 4	189	78-13	200	105- 9	237	46- 0	90	16- 0	28	1-14	3	0- 0	0	0- 0	0	....
1915	366-11	715	0- 0	0	2- 0	7	8- 7	26	14-10	40	48- 4	116	70- 0	149	99- 6	186	55-10	92	45-12	69	22-10	30	....
Average	**324.2**	**728**	**3.1**	**13**	**11.8**	**39**	**32.6**	**94**	**50.8**	**131**	**75.8**	**174**	**67.2**	**137**	**37.3**	**69**	**24.0**	**41**	**15.3**	**23**	**6.2**	**8**	....
Standard grade—																							
1912	38-14	114	8- 5	36	4-15	16	7- 2	20	8- 0	20	5- 0	11	5- 8	11	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	70- 2	185	3- 6	14	7- 2	24	17- 3	50	11- 2	29	14-13	35	11- 6	24	3-12	7	0-10	1	0- 0	0	0-12	1	....
1914	27- 8	98	7- 6	43	3- 1	11	7-12	22	4- 0	10	3- 0	7	2- 5	5	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	77- 0	170	4- 6	25	1- 4	5	3- 1	9	2-15	8	7- 6	17	18- 8	39	16- 1	30	8- 5	14	13-12	21	1- 6	2	....
Average	**53.4**	**142**	**5.9**	**30**	**4.1**	**14**	**8.8**	**25**	**6.5**	**17**	**7.5**	**18**	**9.4**	**20**	**5.0**	**9**	**2.2**	**4**	**3.6**	**5**	**0.5**	**0.8**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
4. Washington strain—Con.																							
Cull fruits—																							
1912	16- 7	57																					
1913	15- 1	42																					
1914	5- 9	25																					
1915	6-10	16																					
Average	**10.9**	**35**																					
Total crop—																							
1912	395- 8	954	13-15	57	24- 7	78	26-14	77	77-10	200	82- 2	189	99- 0	202	5-12	11	34- 5	60	13-10	21	1- 6	2	1
1913	340- 1	816	5-12	23	16- 1	53	54- 2	155	51- 3	131	86-14	199	70-12	143	31-12	57	4-15	8	2- 0	3	1- 9	2	1
1914	368- 0	947	11-14	63	20- 0	68	73- 0	211	82-13	210	168- 9	244	48- 5	95	16- 0	28	1-14	3	0- 0	0	0- 0	0	7
1915	450- 5	901	4- 6	25	3- 4	12	11- 8	35	17- 9	48	55-10	133	88- 8	188	115- 7	216	63-15	106	59- 8	90	24- 0	32	11
Average	**388.5**	**905**	**9.0**	**42**	**15.9**	**53**	**41.4**	**120**	**57.3**	**147**	**83.3**	**191**	**76.6**	**157**	**42.2**	**78**	**26.3**	**44**	**18.8**	**29**	**6.7**	**9**	**5**
5. Washington strain:																							
Orchard grade—																							
1912	277- 2	554	1- 6	5	6- 6	20	8- 4	23	33-15	85	35- 8	80	78- 9	156	14-10	26	66- 0	111	23- 8	36	9- 0	12	
1913	186- 8	406	0-14	3	3-12	15	12- 8	41	26- 1	69	36-12	87	33-12	70	45- 3	80	13-15	22	6-13	10	6-14	9	
1914	435- 0	1,040	5- 7	25	17- 7	60	64-11	187	73-12	190	145-10	332	92- 2	183	33- 6	59	2- 9	4	0- 0	0	0- 0	0	
1915	232-15	404	0- 0	0	0- 0	0	1- 8	5	5- 8	15	17-13	44	22-15	49	49- 8	92	45- 3	74	55- 8	83	35- 0	42	
Average	**282.9**	**601**	**1.9**	**8**	**6.9**	**24**	**21.7**	**64**	**34.8**	**90**	**58.9**	**136**	**56.8**	**114**	**35.7**	**64**	**31.9**	**53**	**21.5**	**32**	**12.7**	**16**	
Standard grade—																							
1912	10- 7	27	1- 5	6	0-10	2	0-12	2	2- 6	6	1-12	4	3- 1	6	0- 0	0	0- 9	1	0- 0	0	0- 0	0	
1913	48-14	130	3- 1	15	4- 0	15	6- 2	20	6- 8	19	9- 9	25	8-11	18	6- 1	11	1- 4	2	1- 6	2	2- 4	3	
1914	22-12	62	1- 4	7	4- 6	14	5- 8	15	3-10	9	4- 0	9	4- 0	8	0- 0	0	0- 0	0	0- 0	0	0- 0	0	
1915	133- 8	251	0- 3	1	1- 1	4	2- 8	8	2- 7	7	9- 0	23	25- 1	55	26- 5	50	21-10	36	32-14	51	12- 7	16	
Average	**53.9**	**118**	**1.5**	**7**	**2.5**	**9**	**3.7**	**11**	**3.7**	**10**	**6.1**	**15**	**10.2**	**22**	**8.1**	**15**	**5.9**	**10**	**8.6**	**13**	**3.6**	**5**	

Cull fruits—																							
1912	8- 1	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	59- 6	199	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	11-14	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	53- 5	129	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**33.2**	**96**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	295-10	601	2-11	11	7- 0	22	9- 0	25	36- 5	91	37- 4	84	81-10	162	14-10	26	66- 9	112	23- 8	36	9- 0	12	2
1913	234-12	735	3-15	18	7-12	30	18-10	61	32- 9	88	46- 5	112	42- 7	88	51- 4	91	15- 3	24	8- 3	12	9- 2	12	3
1914	469-10	1,140	6-11	32	21-13	74	70- 3	202	77- 6	199	149-10	341	96- 2	191	33- 6	59	2- 9	4	0- 0	0	0- 0	0	11
1915	419-12	784	0- 3	1	1- 1	4	4- 0	13	7-15	22	26-13	67	48- 0	104	75-13	142	66-13	110	88- 6	134	47- 7	58	21
Average	**369.9**	**815**	**3.4**	**15**	**9.4**	**33**	**25.4**	**75**	**38.5**	**100**	**65.0**	**151**	**67.1**	**136**	**43.8**	**80**	**37.8**	**63**	**30.0**	**46**	**16.4**	**21**	**9**
6. Washington strain:																							
Orchard grade—																							
1912	268- 2	585	4- 8	16	14-10	45	17-13	50	49- 1	121	45-13	102	73- 4	145	12- 2	22	37- 9	63	9- 6	16	4- 0	5	....
1913	184-12	469	1-11	8	4- 5	15	27- 4	89	31-11	86	54-10	136	40- 9	89	23- 7	44	1- 3	2	0- 0	0	0- 0	0	....
1914	269- 2	875	3-10	17	10-11	37	37- 6	112	63-12	170	133- 0	307	79-10	161	36- 0	63	4- 6	7	0-11	1	0- 0	0	....
1915	286- 0	580	0- 0	0	1- 7	5	3-14	12	12-10	35	43- 6	106	62- 8	137	73- 9	144	41- 5	71	31- 1	48	16- 4	22	....
Average	**277.0**	**627**	**2.5**	**10**	**7.8**	**26**	**21.6**	**66**	**39.3**	**103**	**69.2**	**163**	**64.0**	**133**	**36.3**	**68**	**21.1**	**36**	**10.3**	**16**	**5.1**	**7**	....
Standard grade																							
1912	21-10	67	6- 7	29	1-13	6	3- 3	9	3-13	10	2- 3	5	3-10	7	0- 0	0	0- 9	1	0- 0	0	0- 0	0	....
1913	52- 5	138	1-15	9	2-13	10	7- 4	23	4- 8	13	12- 7	32	13-12	32	7- 8	15	1- 8	3	0-10	1	0- 0	0	....
1914	31-12	85	2-10	14	1-14	6	5-10	16	4- 6	11	9- 7	22	6- 3	13	1-10	3	0- 0	0	0- 0	0	0- 0	0	....
1915	109-10	241	1- 3	9	1- 5	5	5-12	18	5- 5	15	14- 5	36	30- 9	67	23- 4	45	12-15	23	11- 6	18	3-10	5	....
Average	**53.8**	**133**	**3.0**	**15**	**2.0**	**7**	**5.5**	**17**	**4.5**	**12**	**9.6**	**24**	**13.5**	**30**	**8.1**	**16**	**3.8**	**7**	**3.0**	**5**	**0.9**	**1**	....
Cull fruits—																							
1912	11- 2	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	60- 7	209	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	5-10	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	46- 0	140	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**30.8**	**101**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	300-14	690	10-15	45	16- 7	51	21- 0	59	52-14	131	48- 0	107	76-14	152	12- 2	22	38- 2	64	9- 6	16	4- 0	5	0
1913	297- 8	816	3-10	17	7- 2	25	34- 8	112	36- 3	99	67- 1	168	54- 5	121	30-15	59	2-11	5	0-10	1	0- 0	0	1
1914	406- 8	977	6- 4	31	12- 9	43	43- 0	128	68- 2	181	142- 7	329	85-13	174	37-10	66	4- 6	7	0-11	1	0- 0	0	4
1915	441-10	961	1- 3	9	2-12	10	9-10	30	17-15	50	57-11	142	93- 1	204	96-13	189	54- 4	94	42- 7	66	19-14	27	19
Average	**361.6**	**861**	**5.5**	**26**	**9.7**	**32**	**27.0**	**82**	**43.8**	**115**	**78.8**	**186**	**77.5**	**163**	**44.4**	**84**	**24.8**	**43**	**13.3**	**21**	**6.0**	**8**	**6**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
7. Washington strain:																							
Orchard grade—																							
1912	270– 1	605	7– 9	29	17– 6	55	17– 1	48	50– 5	127	40– 5	91	72–14	144	14– 8	27	40– 6	69	9–11	15	0– 0	0	....
1913	118– 3	307	1– 2	6	4– 2	18	15– 6	55	16–15	54	29–10	74	21– 9	47	22– 0	42	3– 1	5	2– 1	3	2– 5	3	....
1914	397–10	929	4–12	24	12–13	44	44– 3	131	80– 6	207	121– 2	273	87 10	173	33– 0	57	10– 0	15	3–12	5	0– 0	0	....
1915	304– 2	705	0– 0	0	4– 0	14	25– 8	78	48–11	132	86– 3	205	76– 9	161	49–12	94	7–15	13	4–12	7	0–12	1	....
Average	**272.5**	**637**	**3.4**	**15**	**9.6**	**33**	**25.5**	**78**	**49.1**	**130**	**69.3**	**161**	**64.7**	**131**	**29.8**	**55**	**15.3**	**26**	**5.1**	**8**	**0.8**	**1**	....
Standard grade—																							
1912	19–12	66	9– 2	39	2– 2	7	1– 1	3	2– 6	6	4– 0	9	1– 1	2	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	66– 5	177	4– 3	25	3– 7	14	11– 7	39	5–15	18	8–10	23	14– 8	35	6– 5	13	3–15	7	1– 4	2	0–11	1	....
1914	30– 7	79	2– 5	12	2– 2	7	3–13	11	3– 0	8	7– 8	18	8– 5	17	3– 6	6	0– 0	0	0– 0	0	0– 0	0	....
1915	40– 6	107	1– 5	7	3–11	13	10– 7	31	3– 4	9	8–11	21	7– 6	16	3–12	7	1– 3	2	0–11	1	0– 0	0	....
Average	**37.7**	**107**	**4.2**	**21**	**2.8**	**10**	**6.7**	**21**	**3.6**	**10**	**7.2**	**18**	**7.8**	**18**	**3.4**	**7**	**1.3**	**2**	**0.5**	**0.8**	**0.2**	**0.3**	....
Cull fruits—																							
1912	15– 7	58	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	36– 1	291	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	15– 6	42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	41–10	131	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**39.6**	**130**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	305– 4	729	16–11	68	19– 8	62	18– 2	51	52–11	133	44– 5	100	73 15	146	14– 8	27	40–6	69	9–11	15	0– 0	0	2
1913	264– 9	775	5– 5	31	7– 9	32	26–13	94	22–14	72	38– 4	97	36– 1	82	28– 5	55	7–0	12	3– 5	5	3– 0	4	2
1914	443– 7	1,050	7– 1	36	14–15	51	48– 0	142	83– 6	215	128–10	291	95–15	190	36– 6	63	10–0	15	3–12	5	0– 0	0	9
1915	386– 2	943	1– 5	7	7–11	27	35–15	109	51–15	141	94–14	226	83–15	177	53– 8	101	9–2	15	5– 7	8	0–12	1	13
Average	**349.8**	**874**	**7.6**	**36**	**12.4**	**43**	**32.2**	**99**	**52.7**	**140**	**76.5**	**178**	**72.5**	**149**	**33.2**	**62**	**16.6**	**28**	**5.5**	**8**	**0.9**	**1**	**7**

10. Washington strain:																						
Orchard grade—																						
1912	257- 3	501	2- 9	9	6-13	21	9-15	27	25- 4	62	34- 8	75	66- 7	130	15- 8	28	52- 5	87	33- 0	48	10-14	14	....
1913	113- 4	235	0- 0	0	1- 7	5	3- 9	11	12- 7	33	22- 3	52	26- 5	53	30- 0	54	10-11	17	2-12	4	4- 8	6	....
1914	401- 9	915	2-14	13	13- 8	46	48- 4	140	66-13	169	127- 9	284	98-15	190	38- 4	65	5- 6	8	0- 0	0	0- 0	0	....
1915	217-14	383	0- 0	0	0- 0	0	0-10	2	3- 0	8	13- 6	31	26- 2	54	70- 9	136	42-12	67	38-15	57	22- 8	28	....
Average	**247.5**	**509**	**1.4**	**6**	**5.4**	**18**	**15.6**	**45**	**26.9**	**68**	**49.4**	**111**	**54.5**	**107**	**38.6**	**71**	**27.8**	**45**	**18.7**	**27**	**9.5**	**12**	....
Standard grade—																						
1912	13- 5	34	2- 1	9	1-14	6	1- 0	3	1-12	4	1- 7	3	2-11	5	0-10	1	1-14	3	0- 0	0	0- 0	0	....
1913	35-12	82	0- 6	2	2-14	10	3-13	11	1- 9	4	6- 7	16	9-14	21	4- 5	8	3- 2	5	3- 6	5	0- 0	0	....
1914	39-12	107	3- 3	17	5- 8	18	6-13	19	6- 6	16	5- 6	12	11- 6	23	1- 2	2	0- 0	0	0- 0	0	0- 0	0	....
1915	93-12	167	0- 0	0	0- 0	0	1-15	6	2- 5	6	5- 0	12	18- 5	38	22- 0	40	18- 3	30	21-14	30	4- 2	5	....
Average	**45.6**	**98**	**1.4**	**7**	**2.6**	**9**	**3.4**	**10**	**3.0**	**8**	**4.6**	**11**	**10.6**	**22**	**7.0**	**13**	**5.8**	**10**	**6.3**	**9**	**1.0**	**1**	....
Cull fruits—																						
1912	15- 4	42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	68- 9	204	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	10- 4	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	87- 1	185	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**45.3**	**115**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1912	285-12	577	4-10	18	8-11	27	10-15	30	27- 0	66	35-15	78	69- 2	135	16- 2	29	54- 3	90	33- 0	48	10-14	14	1
1913	218- 3	521	0- 6	2	4- 5	15	7- 6	22	14- 0	37	28-10	68	36- 3	74	34- 5	62	13-13	22	6- 2	9	4- 8	6	5
1914	451- 9	1,052	6- 1	30	19- 0	64	55- 1	159	73- 3	185	132-15	296	110- 5	213	39- 6	67	5- 6	8	0- 0	0	0- 0	0	7
1915	398-11	735	0- 0	0	0- 0	0	2- 9	8	5- 5	14	18- 6	43	44- 7	92	92- 9	176	60-15	97	60-13	87	26-10	33	12
Average	**338.5**	**721**	**2.8**	**13**	**8.0**	**26**	**19.0**	**55**	**29.8**	**76**	**54.0**	**121**	**65.0**	**129**	**45.6**	**83**	**33.6**	**54**	**24.9**	**36**	**10.5**	**13**	**6**
12. Golden Nugget strain:																						
Orchard grade—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	208-15	434	1- 4	5	7-12	25	16-12	46	22-15	55	45- 2	117	50- 4	92	37-12	59	13- 1	18	10- 7	13	3-10	4	....
1915	191- 8	378	0- 0	0	0- 5	1	6- 6	19	16-11	43	38- 0	87	39- 5	80	51-15	92	14-11	23	13-12	20	10- 7	13	....
Average	**200.2**	**406**	**0.6**	**3**	**4.0**	**13**	**11.6**	**33**	**19.8**	**49**	**41.6**	**102**	**44.8**	**86**	**44.8**	**76**	**13.9**	**21**	**12.1**	**17**	**7.0**	**9**	....
Standard grade—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	33-14	71	1- 0	5	1-10	5	5-10	15	4- 2	10	4- 8	9	6-11	12	5- 0	8	0-10	1	3-14	5	0-13	1	....
1915	57- 7	131	1- 0	5	4- 7	15	8- 0	24	4-10	12	9-14	24	11-15	24	6-15	12	2- 9	4	6- 8	9	1- 9	2	....
Average	**45.7**	**101**	**1.0**	**5**	**3.0**	**10**	**6.8**	**20**	**4.4**	**11**	**7.2**	**17**	**9.3**	**18**	**6.0**	**10**	**1.6**	**3**	**5.2**	**7**	**1.2**	**2**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes. Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		Number of variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
12. Golden Nugget strain—Con.																						
Cull fruits—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	17- 3	47	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	158- 6	506	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**87.8**	**277**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	260- 0	552	2- 4	10	9- 6	30	22- 6	61	27- 1	65	49-10	126	56-15	101	42-12	67	13-11	14	14- 5	18	4- 7	5	21
1915	407- 5	1,015	1- 0	5	4-12	16	14- 6	43	21- 5	55	47-14	111	51- 4	104	58-14	104	17- 4	27	20- 4	29	12- 0	15	52
Average	**333.7**	**784**	**1.6**	**7**	**7.1**	**23**	**18.4**	**52**	**24.2**	**60**	**48.8**	**118**	**54.1**	**104**	**50.8**	**86**	**15.5**	**23**	**17.3**	**24**	**8.2**	**10**	**37**
13. Washington strain:																						
Orchard grade—																						
1912	308- 6	749	9- 8	36	29- 3	93	31- 0	88	78-12	200	71- 4	161	57- 8	117	6- 5	12	19-12	34	4- 7	7	0-11	1	....
1913	115-10	195	0- 0	0	0-15	3	3-12	10	3-12	9	10- 1	21	17-14	33	39- 8	64	12- 0	18	15-10	22	12- 2	15	....
1914	210- 5	400	0- 0	0	1- 4	4	10- 2	29	20- 8	51	53-13	115	42-15	80	38-12	63	22-10	32	12-12	17	7- 9	9	....
1915	346-10	731	0-11	3	3- 7	12	14-13	44	37- 7	98	73- 5	171	85- 7	176	80- 2	145	34- 3	57	11- 5	17	5-14	8	....
Average	**245.2**	**519**	**2.5**	**10**	**8.7**	**28**	**14.9**	**43**	**35.1**	**90**	**52.1**	**117**	**50.9**	**102**	**41.2**	**71**	**22.1**	**35**	**11.0**	**16**	**6.6**	**8**	....
Standard grade—																						
1912	42- 0	127	13- 2	55	5- 1	16	7- 3	20	5-11	14	3-14	9	3- 0	6	0- 9	1	3- 8	6	0- 0	0	0- 0	0	....
1913	58- 0	111	0- 8	2	1- 4	4	3- 4	9	5- 0	11	9- 4	20	15-14	30	10- 2	17	1-14	3	6-14	10	4- 0	5	....
1914	24-12	60	1-13	10	1- 6	4	4-13	13	2- 3	5	6- 4	14	3-10	7	1-11	3	0- 0	0	3- 0	4	0- 0	0	....
1915	37-14	93	2-12	13	1-11	6	6- 3	18	1-14	5	4- 6	11	11- 0	23	6- 3	11	1-13	3	2- 0	3	0- 0	0	....
Average	**40.7**	**98**	**4.5**	**20**	**2.3**	**8**	**5.4**	**15**	**3.7**	**9**	**5. 9**	**14**	**8.4**	**17**	**4.6**	**8**	**1.8**	**3**	**3.0**	**4**	**1.0**	**1**	....

Cull fruits—																							
1912	44- 7	167	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	39- 4	89	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	35- 0	111	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	44- 9	134	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**40.8**	**125**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	394-13	1,043	22-10	91	34- 4	109	38- 3	108	84- 7	214	75- 2	170	60- 8	123	6-14	13	23- 4	40	4- 7	7	0-11	1	1
1913	212-14	395	0- 8	2	2- 3	7	7- 0	19	8-12	20	19- 5	41	33-12	63	49-10	81	13-14	21	22- 8	32	16- 2	20	0
1914	270- 1	571	1-13	10	2-10	8	14-15	42	22-11	56	60- 1	129	46- 9	87	40- 7	66	22-10	32	15-12	21	7- 9	9	11
1915	429- 1	958	3- 7	16	5- 2	18	21- 0	62	39- 5	103	77-11	182	96- 7	199	86- 5	156	36- 0	60	13- 5	20	5-14	8	7
Average	**326.7**	**742**	**7.1**	**30**	**11.0**	**36**	**20.3**	**58**	**38.8**	**98**	**58.0**	**131**	**59.3**	**118**	**45.8**	**79**	**23.9**	**38**	**14.0**	**20**	**7.6**	**10**	**5**
16. Washington strain:																							
Orchard grade—																							
1912	305- 0	614	3-10	14	9-12	30	10- 0	28	46-15	117	36- 2	80	75-14	148	18-11	33	56- 3	93	35- 7	51	12- 6	20	....
1913	102- 7	254	1- 0	5	4- 2	17	9- 9	34	11- 6	34	20- 2	51	23- 8	53	22-10	44	6- 8	11	2- 2	3	1- 8	2	....
1914	305- 7	573	2- 8	8	7-10	21	30- 9	72	84-12	176	76- 2	138	69-12	111	29- 8	41	4-10	6	0- 0	0	0- 0	0	....
1915	265- 5	484	0- 7	2	0- 0	0	3- 8	10	10-11	27	41- 0	89	66-11	129	82- 7	141	26- 1	40	23- 1	32	11- 7	14	....
Average	**244.5**	**481**	**1.9**	**7**	**5.4**	**17**	**13.4**	**36**	**38.4**	**89**	**43.3**	**90**	**59.0**	**110**	**38.3**	**65**	**23.3**	**38**	**15.2**	**22**	**6.3**	**9**	....
Standard grade—																							
1912	28- 2	69	2- 3	10	2-14	9	3-12	10	4-12	12	2-11	6	6-11	13	1- 2	2	4- 1	7	0- 0	0	0- 0	0	....
1913	65- 9	179	2- 6	13	6- 1	24	8-15	30	7-12	23	13- 1	34	14- 8	32	5- 8	11	4-10	8	1-15	3	0-13	1	....
1914	42- 6	91	1- 4	6	0-10	2	6-12	18	4-12	11	9- 0	19	13-12	26	1-14	3	1- 7	2	2- 2	3	0-13	1	....
1915	66- 4	118	0- 0	0	0- 4	2	1-14	5	2- 6	6	8- 0	18	22- 5	43	12- 3	21	8- 2	10	11- 2	13	0- 0	0	....
Average	**50.6**	**114**	**1.5**	**7**	**2.5**	**9**	**5.3**	**16**	**4.9**	**13**	**8.2**	**19**	**14.3**	**29**	**5.2**	**9**	**4.6**	**7**	**3.8**	**5**	**0.4**	**0.5**	....
Cull fruits—																							
1912	7- 9	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	73-13	265	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	5- 1	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	14- 2	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**25.1**	**85**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	340-11	703	5-13	24	12-10	39	13-12	38	51-11	129	38-13	86	82- 9	161	19-13	35	60- 4	100	35- 7	51	12- 6	20	1
1913	241-13	698	3- 6	18	10- 3	41	18- 8	64	19- 2	57	33- 3	85	38- 0	85	28- 2	55	11- 2	19	4- 1	6	2- 5	3	0
1914	352-14	683	3-12	14	8- 4	23	37- 5	90	89- 8	187	85- 2	157	83- 8	137	31- 6	44	6- 1	8	2- 2	3	0-13	1	12
1915	345-11	638	0- 7	2	0- 4	2	5- 6	15	13- 1	33	49- 0	107	89- 0	172	94-10	162	34- 3	50	34- 3	45	11- 7	14	7
Average	**320.3**	**681**	**3.3**	**15**	**7.8**	**26**	**18.7**	**52**	**43.3**	**102**	**51.5**	**109**	**73.3**	**139**	**43.5**	**74**	**27.9**	**44**	**19.0**	**26**	**6.7**	**1.0**	**5**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
18. Washington strain:																							
Orchard grade—																							
1912	308–11	690	5–10	21	12–11	40	18– 2	54	67– 7	170	62– 4	138	84– 0	169	12– 6	23	31–11	55	6– 8	10	8– 0	10	....
1913	165– 1	338	0–12	3	6– 1	19	11– 5	33	12– 8	32	36–15	81	41– 3	79	32– 9	56	14– 2	22	5– 0	7	4–10	6	....
1914	287– 3	640	1–12	7	6– 2	21	27–15	81	57– 3	143	98– 0	218	50– 3	96	27–12	48	7– 4	11	9– 8	13	1– 8	2	....
1915	236– 1	421	0– 0	0	0– 5	1	4– 3	13	9– 1	24	25–14	59	39–14	80	71–12	122	26–12	42	32– 0	46	26– 4	34	....
Average	**249.3**	**522**	**2.0**	**8**	**6.3**	**20**	**15.4**	**45**	**36.5**	**92**	**55.8**	**124**	**53.8**	**106**	**36.1**	**62**	**20.0**	**33**	**13.3**	**19**	**10.1**	**13**	....
Standard grade—																							
1912	30– 4	81	3–11	15	5– 6	17	6– 4	17	3– 9	9	6– 2	13	4– 2	8	0– 0	0	1– 2	2	0– 0	0	0– 0	0	....
1913	43– 5	104	2– 2	9	5– 6	17	6– 8	18	4– 0	10	8– 9	19	8–10	17	6– 2	11	0–10	1	1– 6	2	0– 0	0	....
1914	42–14	123	5– 3	26	8– 0	25	13– 1	36	5– 6	13	5– 0	11	4– 6	9	0– 9	1	0–10	1	0–11	1	0– 0	0	....
1915	39– 8	83	0– 8	2	0–13	3	1– 5	4	2– 6	6	4– 0	10	14– 6	30	6– 8	12	3– 0	6	5–12	9	0–14	1	....
Average	**39.0**	**98**	**2.9**	**13**	**4.9**	**16**	**6.8**	**19**	**3.8**	**10**	**5.9**	**13**	**7.9**	**16**	**3.3**	**6**	**1.3**	**3**	**2.0**	**3**	**0.2**	**0.3**	....
Cull fruits—																							
1912	27–12	86	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	24– 8	64	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	15–12	73	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	15–12	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**20.9**	**66**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	366–11	857	9– 5	36	18– 1	57	24– 6	71	71– 0	179	68– 6	151	88– 2	177	12– 6	23	32–13	57	6– 8	10	8– 0	10	8
1913	232–14	505	2–14	12	11– 7	36	17–13	51	16– 8	42	45– 8	100	49–13	96	38–11	67	14–12	23	6– 6	9	4–10	6	2
1914	345–13	836	6–15	33	14– 2	46	41– 0	117	62– 9	156	103– 0	229	54– 9	105	28– 5	49	7–14	12	10– 3	14	1– 8	2	9
1915	291– 5	544	0– 8	2	1– 2	4	5– 8	17	11– 7	30	29–14	69	54– 4	110	78– 4	134	29–12	48	37–12	55	27– 2	35	3
Average	**309.2**	**686**	**4.9**	**21**	**11.2**	**36**	**22.2**	**64**	**40.4**	**102**	**61.7**	**137**	**61.7**	**122**	**39.4**	**68**	**21.3**	**35**	**15.2**	**22**	**10.3**	**13**	**6**

22. Thomson-Washington strain:																							
Orchard grade—																							
1912	271– 1	817	40– 2	165	51–11	173	45–12	138	76– 1	205	40– 5	98	15– 1	34	1– 8	3	0– 9	1	0– 0	0	0– 0	0	....
1913	202– 8	530	5–10	23	12– 3	42	42– 4	126	53– 0	141	56–11	132	24– 9	51	8– 3	15	0– 0	0	0– 0	0	0– 0	0	....
1914	263–14	656	2–10	12	15– 5	48	46–10	136	66– 6	171	86– 2	197	35–14	72	9–11	18	1– 4	2	0– 0	0	0– 0	0	....
1915	266–14	610	0–14	4	4– 4	16	24– 2	76	31– 4	85	62–11	152	56–15	121	60– 8	114	18– 9	31	5– 6	8	2– 5	3	....
Average	**251.1**	**653**	**12.3**	**51**	**20.9**	**70**	**39.7**	**119**	**56.7**	**151**	**61.5**	**145**	**33.1**	**70**	**20.0**	**38**	**5.1**	**9**	**1.3**	**2**	**0.6**	**0.8**	....
Standard grade—																							
1912	12–11	50	7–11	35	2– 2	7	2– 8	7	0– 6	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	40–11	127	7– 4	31	7–10	26	11–10	35	5–11	16	5–10	13	2–14	6	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1914	55–11	164	7– 4	37	8– 6	27	15–14	45	7– 3	18	9– 6	22	4–14	10	2–12	5	0– 0	0	0– 0	0	0– 0	0	....
1915	42– 7	125	5– 2	25	4– 0	15	7– 4	23	4– 9	13	9–14	24	11– 0	24	0– 0	0	0– 0	0	0–10	1	0– 0	0	....
Average	**37.9**	**117**	**6.8**	**32**	**5.5**	**19**	**9.3**	**28**	**4.5**	**12**	**6.2**	**15**	**4.7**	**10**	**0.7**	**1**	**0**	**0**	**0.2**	**0.3**	**0**	**0**	....
Cull fruits—																							
1912	9– 0	39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	14– 2	53	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	14– 9	56	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	18–12	51	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**14.1**	**50**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	292–12	906	47–13	200	53–13	180	48– 4	145	76– 7	206	40– 5	98	15– 1	34	1– 8	3	0– 9	1	0– 0	0	0– 0	0	4
1913	257– 5	710	12–14	54	19–13	68	53–14	161	58–11	157	62– 5	145	27– 7	57	8– 3	15	0– 0	0	0– 0	0	0– 0	0	0
1914	334– 2	876	9–14	49	23–11	75	62– 8	181	73– 9	189	95– 8	219	40–12	82	12– 7	23	1– 4	2	0– 0	0	0– 0	0	2
1915	328– 1	786	6– 0	29	8– 4	31	31– 6	99	35–13	98	72– 9	176	67–15	145	60– 8	114	18– 9	31	6– 0	9	2– 5	3	16
Average	**303.1**	**820**	**19.1**	**83**	**26.4**	**89**	**49.0**	**147**	**61.1**	**163**	**67.7**	**160**	**37.8**	**80**	**20.7**	**39**	**5.1**	**9**	**1.5**	**2**	**0.6**	**0.8**	**6**
24. Washington strain:																							
Orchard grade—																							
1912	291–10	607	3– 8	13	10– 8	33	15– 4	43	42– 1	104	43–14	96	84– 7	165	12– 7	23	61– 5	103	9–14	15	8– 6	12	....
1913	143– 1	285	1– 0	4	3– 6	11	10– 4	28	14–14	36	27– 4	58	32– 1	61	31–15	55	10– 9	16	7–10	11	4– 2	5	....
1914	273–10	629	0–10	3	9–10	32	37–10	107	68– 6	168	102– 2	219	35–10	67	16– 4	28	2–11	4	0–11	1	0– 0	0	....
1915	235– 6	483	0– 0	0	0– 0	0	11– 5	33	19– 8	50	57– 0	130	53– 6	108	60– 0	109	23–15	38	7– 4	11	3– 0	4	....
Average	**235.9**	**501**	**1.3**	**5**	**5.9**	**19**	**18.6**	**53**	**36.2**	**90**	**57.6**	**126**	**51.4**	**100**	**30.2**	**54**	**24.6**	**40**	**6.4**	**10**	**3.9**	**5**	....
Standard grade—																							
1912	23–10	61	2– 7	11	3– 3	10	2–12	8	5–10	13	2–10	6	5– 4	10	1– 2	2	0–10	1	0– 0	0	0– 0	0	....
1913	33– 0	79	2–10	10	4– 2	13	4– 2	11	3–11	9	7– 4	16	5–10	11	2–13	5	0–10	1	0–11	1	1– 7	2	....
1914	54– 4	165	10– 6	51	5– 8	18	17– 7	48	8– 2	20	9– 3	21	2– 0	4	1–10	3	0– 0	0	0– 0	0	0– 0	0	....
1915	53– 0	127	2– 5	12	4– 3	14	5– 9	16	4– 5	11	6–13	16	15–10	33	10– 1	18	2–14	5	1– 4	2	0– 0	0	....
Average	**41.0**	**108**	**4.4**	**21**	**4.3**	**14**	**7.5**	**21**	**5.4**	**13**	**6.5**	**15**	**7.1**	**15**	**3.9**	**7**	**0.8**	**2**	**0.5**	**0.8**	**0.4**	**0.5**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
24 Washington strain—Con.																							
Cull fruits—																							
1912	15- 3	74	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	42-14	110	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	24-12	85	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	16-15	47	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**24.9**	**79**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																							
1912	330- 7	742	5-15	24	13-11	43	18- 0	51	47-11	117	46- 8	102	89-11	175	13- 9	25	61-15	104	9-14	15	8- 6	12	4
1913	218-15	474	3-10	14	7- 8	24	14- 6	39	18- 9	45	34- 8	74	37-11	72	34-12	60	11- 3	17	8- 5	12	5- 9	7	0
1914	352-10	879	11- 0	54	15- 2	50	55- 1	155	76- 8	188	111- 5	240	37-10	71	17-14	31	2-11	4	0-11	1	0- 0	0	10
1915	305- 5	657	2- 5	12	4- 3	14	16-14	49	23-13	61	63-13	146	69- 0	141	70- 1	127	26-13	43	8- 8	13	3- 0	4	4
Average	**301.8**	**688**	**5.7**	**26**	**10.1**	**33**	**26.1**	**74**	**41.6**	**103**	**64.0**	**141**	**58.5**	**115**	**34.1**	**61**	**25.7**	**42**	**6.8**	**10**	**4.2**	**6**	**5**
25. Washington strain:																							
Orchard grade—																							
1912	280- 5	561	4- 3	16	20- 3	62	30-14	85	76- 2	187	52-11	116	71- 2	141	12- 7	22	11- 7	20	1- 4	2	0- 0	0	....
1913	125-13	244	0- 4	1	2-11	8	7-15	20	11- 5	26	30-14	65	24- 5	46	31-12	54	8- 9	13	5-13	8	2- 5	3	....
1914	165- 2	352	0- 0	0	3-15	13	15-14	44	28-15	71	57-11	121	34- 0	63	20- 3	34	2- 2	3	0-11	1	1-11	2	....
1915	274-15	580	0- 3	1	5- 3	18	19- 4	57	32- 1	83	63- 9	144	52-10	106	61-11	110	18- 1	29	17-15	26	4- 6	6	....
Average	**211.5**	**457**	**1.2**	**5**	**8.0**	**25**	**18.5**	**52**	**37.1**	**92**	**51.2**	**112**	**45.5**	**89**	**31.5**	**55**	**10.0**	**16**	**6.4**	**9**	**2.1**	**3**	....
Standard grade—																							
1912	39- 6	110	8- 2	32	5-15	18	9-10	26	8-10	20	3- 7	7	3- 1	6	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1913	32- 6	67	0-13	3	1-10	5	3- 6	9	3-15	9	5- 6	12	7-12	15	3-10	6	1- 5	2	2- 0	3	2- 9	3	....
1914	37-13	96	2-14	13	4- 2	13	9- 3	25	5- 8	13	7- 8	16	5- 0	10	3- 0	6	0- 0	0	0- 0	0	0- 0	0	....
1915	23- 8	60	1- 5	6	2- 6	8	3- 1	9	4-12	12	3- 6	8	7- 7	15	0- 9	1	0-10	1	0- 0	0	0- 0	0	....
Average	**33.3**	**83**	**3.3**	**14**	**3.5**	**11**	**6.3**	**17**	**5.7**	**14**	**4.9**	**11**	**5.8**	**12**	**2.1**	**4**	**0.5**	**0.8**	**0.5**	**1**	**0.6**	**0.8**	....

Cull fruits—																							
1912	46- 3	157																					
1913	49- 0	120																					
1914	40- 6	135																					
1915	43- 5	130																					
Average	**44.7**	**136**																					
Total crop—																							
1912	365-14	918	12- 5	48	26- 2	80	40- 8	111	84-12	207	56- 2	123	74- 3	147	13- 0	23	11- 7	20	1- 4	2	0- 0	0	0
1913	207- 3	413	1- 1	4	4- 5	13	11- 5	29	15- 4	35	36- 4	77	32- 1	61	35- 6	60	9-14	15	7-13	11	4-14	6	0
1914	243- 5	583	2-14	13	8- 1	26	25- 1	69	34- 7	84	65- 3	137	39- 0	73	23-13	40	2- 2	3	0-11	1	1-11	2	10
1915	341-13	770	1- 8	7	7- 9	26	22- 5	66	36- 3	95	66-15	152	60- 1	121	62- 4	111	18-11	30	17-15	26	4- 6	6	1
Average	**289.5**	**676**	**4.4**	**18**	**11.5**	**36**	**24.8**	**69**	**42.8**	**105**	**56.1**	**122**	**51.3**	**101**	**33.6**	**59**	**10.5**	**17**	**6.9**	**10**	**2.7**	**4**	**3**
26. Thomson strain:																							
Orchard grade—																							
1912	232- 6	602	9- 9	37	32-11	105	26-10	78	64-10	170	45-14	106	39-10	82	4-12	9	8- 0	14	0-10	1	0- 0	0	
1913	146- 0	372	5- 4	14	14- 6	43	40- 4	115	34- 2	90	36- 2	80	11-12	23	2-14	5	1- 4	2	0- 0	0	0- 0	0	
1914	273- 1	696	6- 4	32	20- 8	69	53-10	154	77- 8	195	81- 5	180	28- 4	56	5-10	10	0- 0	0	0- 0	0	0- 0	0	
1915	219- 0	488	0-14	4	7- 2	26	19-15	61	27- 8	73	41- 9	96	45- 0	93	52- 0	96	18- 0	29	5- 8	8	1- 8	2	
Average	**217.6**	**540**	**5.5**	**22**	**18.7**	**61**	**35.1**	**102**	**50.9**	**132**	**51.2**	**116**	**31.2**	**64**	**16.3**	**30**	**6.8**	**11**	**1.5**	**2**	**0.4**	**0.5**	
Standard grade—																							
1912	22- 7	72	7- 7	33	3- 6	10	4- 4	12	3- 9	9	0-14	2	2- 6	5	0- 9	1	0- 0	0	0- 0	0	0- 0	0	
1913	65- 4	207	15-11	66	20-14	68	14- 0	39	6-10	17	4- 7	10	2- 0	4	1-10	3	0- 0	0	0- 0	0	0- 0	0	
1914	26- 6	74	2-14	14	3- 8	11	7- 6	20	3-14	10	4- 7	10	3-12	8	0- 0	0	0- 9	1	0- 0	0	0- 0	0	
1915	68- 0	188	5-14	27	6- 2	22	12- 2	37	5- 0	14	20- 6	50	13-10	29	3- 2	6	1- 2	2	0-10	1	0- 0	0	
Average	**45.5**	**135**	**8.0**	**35**	**8.5**	**28**	**9.4**	**27**	**4.8**	**13**	**7.5**	**18**	**5.4**	**12**	**1.3**	**3**	**0.4**	**0.8**	**0.2**	**0.3**	**0**	**0**	
Cull fruits—																							
1912	7-15	29																					
1913	35- 0	130																					
1914	12- 7	54																					
1915	42- 8	104																					
Average	**24.5**	**79**																					
Total crop—																							
1912	262-12	703	17- 0	70	36- 1	115	30-14	90	68- 3	179	46-12	108	42- 0	87	5- 5	10	8- 0	14	0-10	1	0- 0	0	3
1913	246- 4	709	20-15	80	35- 4	111	54- 4	154	40-12	107	40- 9	90	13-12	27	4- 8	8	1- 4	2	0- 0	0	0- 0	0	24
1914	311-14	824	9- 2	46	24- 0	80	61- 0	174	81- 6	205	85-12	190	32- 0	64	5-10	10	0- 9	1	0- 0	0	0- 0	0	17
1915	329- 8	780	6-12	31	13- 4	48	32- 1	98	32- 8	87	61-15	146	58-10	122	55- 2	102	19- 2	31	6- 2	9	1- 8	2	55
Average	**287.6**	**754**	**13.5**	**57**	**27.1**	**89**	**44.5**	**129**	**55.7**	**145**	**58.8**	**134**	**36.6**	**75**	**17.6**	**33**	**7.2**	**12**	**1.7**	**3**	**0.4**	**0.5**	**25**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																							Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
34. Washington strain:																							
Orchard grade—																							
1912	242- 2	612	11-10	44	24- 0	76	14-14	57	56- 4	146	57- 8	134	57- 5	118	6- 7	12	14- 2	25	0- 0	0	0- 0	0	....
1913	183- 0	477	1- 9	7	12- 4	43	39- 2	117	54- 7	142	59- 2	135	13-12	28	2-12	5	0- 0	0	0- 0	0	0- 0	0	....
1914	245-14	459	1- 8	5	7- 3	20	17-15	44	59- 6	125	58-12	108	71- 8	115	21- 7	31	8- 3	11	0- 0	0	0- 0	0	....
1915	278-10	515	0- 0	0	1- 6	5	4- 8	14	10-10	28	31-10	74	50- 0	104	64-14	118	53- 4	86	40- 2	59	22- 4	27	....
Average	**237.4**	**516**	**3.7**	**14**	**11.2**	**36**	**19.1**	**58**	**45.2**	**110**	**51.8**	**113**	**48.1**	**91**	**23.9**	**42**	**18.9**	**31**	**10.0**	**15**	**5.6**	**7**	....
Standard grade—																							
1912	13-10	43	4- 0	17	1-14	6	3- 8	10	2-12	7	0- 7	1	0- 8	1	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1913	37- 8	116	7- 6	32	7- 8	25	11-12	34	3- 2	8	5-12	13	2- 0	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	42- 4	89	1-13	9	1-14	6	4- 6	11	2-11	6	5- 8	12	9- 7	18	9-13	17	5- 3	8	1- 9	2	0- 0	0	....
1915	29-10	66	1-10	8	1- 6	5	1-11	5	1- 2	3	2- 8	6	7- 2	15	7- 1	13	5- 0	8	1- 6	2	0-12	1	....
Average	**30.8**	**79**	**3.7**	**17**	**3.2**	**11**	**5.3**	**15**	**2.4**	**6**	**3.5**	**8**	**4.8**	**10**	**4.4**	**8**	**2.5**	**4**	**0.7**	**1**	**0.2**	**0.3**	....
Cull fruits																							
1912	5- 8	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	14- 2	48	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	9- 4	34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	21- 6	46	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**12.6**	**37**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	261- 4	675	15-10	61	25-14	82	18- 6	67	59- 0	153	57-15	135	57-13	119	7- 0	13	14- 2	25	0- 0	0	0- 0	0	1
1913	234-10	641	8-15	39	19-12	68	50-14	151	57- 9	150	64-14	148	15-12	32	2-12	5	0- 0	0	0- 0	0	0- 0	0	3
1914	297- 6	582	3- 5	14	9- 1	26	22- 5	55	62- 1	131	64- 4	120	80-15	133	31- 4	48	13- 6	19	1- 9	2	0- 0	0	4
1915	329-10	627	1-10	8	2-12	10	6- 3	19	11-12	31	34- 2	80	57- 2	119	71-15	131	58- 4	94	41- 8	61	23- 0	28	8
Average	**280.7**	**631**	**7.4**	**31**	**14.4**	**47**	**24.4**	**73**	**47.6**	**116**	**55.3**	**121**	**52.9**	**101**	**28.2**	**49**	**21.4**	**35**	**10.8**	**16**	**5.8**	**7**	**4**

54. Thomson strain:																						
Orchard grade																						
1912	207–13	681	53–14	226	64– 2	213	31– 7	92	44–12	119	9– 4	22	3–13	8	0– 0	0	0– 9	1	0– 0	0	0– 0	0	....
1913	167–11	417	1– 9	7	10– 8	37	32–15	98	37– 8	96	51– 2	114	21– 5	42	12–12	23	0– 0	0	0– 0	0	0– 0	0	....
1914	248– 5	650	9–14	42	22–10	76	56–11	164	71–12	182	61– 1	136	19– 8	38	6– 2	11	0–11	1	0– 0	0	0– 0	0	....
1915	285–14	776	8–13	39	22–13	84	63– 4	198	57– 8	158	68– 0	166	35– 8	75	25– 7	49	1–12	3	2– 1	3	0–12	1	....
Average	**227.4**	**631**	**18.5**	**79**	**30.0**	**103**	**46.1**	**138**	**52.9**	**139**	**47.4**	**110**	**20.0**	**41**	**11.1**	**21**	**0.8**	**1**	**0.5**	**0.8**	**0.2**	**0.3**	....
Standard grade—																						
1912	15– 3	57	10– 5	43	2– 2	7	0– 6	1	2– 6	6	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	32– 7	96	4–14	22	5–11	19	7– 6	21	3– 2	9	8– 4	19	2– 0	4	1– 2	2	0– 0	0	0– 0	0	0– 0	0	....
1914	31– 0	98	7–15	34	7–14	26	6– 2	17	2– 6	6	4– 4	10	1–15	4	0– 0	0	0– 8	1	0– 0	0	0– 0	0	....
1915	38–15	127	7– 8	39	7– 0	23	9–12	30	4– 4	12	3–10	9	4– 2	9	2– 2	4	0– 9	1	0– 0	0	0– 0	0	....
Average	**29.4**	**95**	**7.7**	**35**	**5.7**	**19**	**5.9**	**17**	**3.0**	**8**	**4.0**	**10**	**2.0**	**4**	**0.8**	**2**	**0.3**	**0.5**	**0**	**0**	**0**	**0**	....
Cull fruits—																						
1912	9– 8	38	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	14– 6	47	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	18–13	82	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	16– 0	47	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**14.7**	**54**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																						
1912	232– 8	776	64– 3	269	66– 4	220	31–13	93	47– 2	125	9– 4	22	3–13	8	0– 0	0	0– 9	1	0– 0	0	0– 0	0	5
1913	214– 8	560	6– 7	29	16– 3	56	40– 5	119	40–10	105	59– 6	133	23– 5	46	13–14	25	0– 0	0	0– 0	0	0– 0	0	8
1914	298– 2	830	17–13	76	30– 8	102	62–13	181	74– 2	188	65– 5	146	21– 7	42	6– 2	11	1– 3	2	0– 0	0	0– 0	0	8
1915	340–13	950	16– 5	78	29–13	107	73– 0	228	61–12	170	71–10	175	39–10	84	27– 9	53	2– 5	4	2– 1	3	0–12	1	24
Average	**271.5**	**779**	**26.2**	**113**	**35.7**	**121**	**52.0**	**155**	**55.9**	**147**	**51.4**	**119**	**22.0**	**45**	**11.9**	**22**	**1.0**	**2**	**0.5**	**0.8**	**0.2**	**0.3**	**11**
57. Washington strain:																						
Orchard grade—																						
1912	231–10	623	22– 5	89	39–12	126	19– 7	57	58–12	155	41– 5	96	35– 7	74	4– 4	8	9–12	17	0–10	1	0– 0	0	....
1913	184–13	497	7– 8	32	16– 5	57	47– 6	141	50– 2	130	41–15	95	15–10	32	5– 3	9	0– 0	0	0– 0	0	0–12	1	....
1914	238– 1	502	1– 4	5	3– 8	11	15– 0	42	38–12	95	83–14	179	59– 2	111	32– 5	53	3– 8	5	0–12	1	0– 0	0	....
1915	250–12	470	0– 0	0	1– 2	4	5– 4	16	11–14	32	31–12	73	46– 8	96	67– 0	122	34– 4	55	27– 2	40	25–14	32	....
Average	**226.3**	**523**	**7.8**	**32**	**15.2**	**50**	**21.8**	**64**	**39.9**	**103**	**49.7**	**111**	**39.2**	**78**	**27.2**	**48**	**11.9**	**19**	**7.1**	**11**	**6.7**	**8**	....
Standard grade—																						
1912	13– 0	44	4– 0	19	3– 8	11	1–14	5	2–12	7	0–14	2	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	23–13	78	5–12	26	6– 7	22	5– 6	15	3– 6	9	0–14	2	2– 0	4	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1914	53–12	129	2–12	13	4–13	15	13–14	38	3–13	9	8–11	19	10–12	20	6– 7	11	2–10	4	0– 0	0	0– 0	0	....
1915	35–15	84	1– 4	6	1– 2	4	4–10	14	1– 8	4	7–10	19	9–11	20	4– 6	8	4– 6	7	1– 6	2	0– 0	0	....
Average	**31.6**	**84**	**3.4**	**16**	**4.0**	**13**	**6.4**	**18**	**2.9**	**7**	**4.5**	**11**	**5.6**	**11**	**2.7**	**5**	**1.8**	**3**	**0.3**	**0.5**	**0**	**0**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
57. Washington strain—Con.																							
Cull fruits—																							
1912	3- 8	16	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1913	13- 5	49	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1914	17- 7	72	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1915	13-10	28	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
Average	**12.0**	**41**	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
Total crop—																							
1912	248- 2	683	26- 5	108	43- 4	137	21- 5	62	61- 8	162	42- 3	98	35- 7	74	4- 4	8	9-12	17	0-10	1	0- 0	0	2
1913	221-15	624	13- 4	58	22-12	79	52-12	156	53- 8	139	42-13	97	17-10	36	5- 3	9	0- 0	0	0- 0	0	0-12	1	1
1914	309- 4	703	4- 0	18	8- 5	26	28-14	80	42- 9	104	92- 9	198	69-14	131	38-12	64	6- 2	9	0-12	1	0- 0	0	4
1915	300- 5	582	1- 4	6	2- 4	8	9-14	30	13- 6	36	39- 6	92	56- 3	116	71- 6	130	38-10	62	28- 8	42	25-14	32	5
Average	**269. 9**	**648**	**11.2**	**48**	**19.1**	**63**	**28.2**	**82**	**42.7**	**110**	**54.2**	**121**	**44.8**	**89**	**29.9**	**53**	**13.6**	**22**	**7.5**	**11**	**6.7**	**8**	**3**
66. Yellow Thomson strain:																							
Orchard grade—																							
1912	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1913	141-12	480	33-10	150	31- 9	114	43- 0	130	22-14	61	9-12	23	0-15	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	202- 3	626	24- 4	113	42-12	150	54- 2	163	43- 8	117	27-12	64	8- 1	16	1-12	3	0- 0	0	0- 0	0	0- 0	0	....
1915	177-11	552	17- 2	74	37-14	138	52- 5	164	28- 7	80	31-11	74	7-11	17	2- 9	5	0- 0	0	0- 0	0	0- 0	0	....
Average	**173.9**	**553**	**25.0**	**112**	**37.4**	**134**	**49.8**	**152**	**31.6**	**86**	**23.1**	**54**	**5.6**	**12**	**1.4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	....
Standard grade—																							
1912	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	......	.....	....
1913	51- 5	183	18-15	87	14- 9	48	8-12	25	5- 3	14	3-14	9	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	37-11	128	7-12	40	10- 4	35	11- 6	33	3- 0	8	2-14	7	1- 7	3	1- 0	2	0- 0	0	0- 0	0	0- 0	0	....
1915	53-11	206	21- 8	100	14- 6	54	10- 2	32	3- 7	10	3- 3	8	0- 8	1	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
Average	**47.6**	**172**	**16.1**	**76**	**13.1**	**46**	**10.1**	**30**	**3.9**	**11**	**3.3**	**8**	**0.6**	**1**	**0.5**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	....

Cull fruits—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	19- 2	84	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	32- 9	140	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	76-15	340	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**42.9**	**188**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	212- 3	747	52- 9	237	46- 2	162	51-12	155	28- 1	75	13-10	32	0-15	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	12
1914	272- 7	894	32- 0	153	53- 0	185	65- 8	196	46- 8	125	30-10	71	9- 8	19	2-12	5	0- 0	0	0- 0	0	0- 0	0	7
1915	308- 5	1,098	38-10	174	52- 4	192	62- 7	196	31-14	90	34-14	82	8- 3	18	3- 2	6	0- 0	0	0- 0	0	0- 0	0	24
Average	**264.3**	**913**	**41.1**	**188**	**50.5**	**180**	**59.9**	**182**	**35.5**	**97**	**26.4**	**62**	**6.2**	**13**	**2.0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**14**
73. Washington strain:																							
Orchard grade—																							
1912	246-10	538	4- 0	15	14-11	47	11- 4	33	42- 0	109	53- 4	122	63- 6	129	12- 1	22	37- 6	48	8-10	13	0- 0	0	....
1913	174-12	406	2-14	11	11- 5	39	29-13	84	26- 0	66	42- 1	92	33- 3	65	22-11	39	3- 5	5	2-12	4	0-12	1	....
1914	199- 2	429	1-10	7	2-10	9	25-10	72	40- 7	98	58-14	124	38-10	71	23- 3	38	1- 6	2	3-14	5	2-14	3	....
1915	169-11	343	0- 0	0	0-13	3	4-10	14	11-13	31	37- 6	85	42-14	88	43- 8	78	18-14	30	7- 8	11	2- 5	3	....
Average	**197.5**	**429**	**2.1**	**8**	**7.4**	**25**	**17.8**	**51**	**30.1**	**76**	**47.9**	**106**	**44.5**	**88**	**25.4**	**44**	**15.2**	**21**	**5.7**	**8**	**1.5**	**2**	....
Standard grade—																							
1912	41- 3	108	3-14	17	5- 0	16	6-12	19	10- 7	26	4- 1	9	8- 3	16	2-14	5	0- 0	0	0- 0	0	0- 0	0	....
1913	22-13	66	4- 7	18	5- 3	17	3- 9	10	2- 2	5	4- 6	10	2- 1	4	1- 1	2	0- 0	0	0- 0	0	0- 0	0	....
1914	50- 3	108	3- 4	17	3- 5	11	4- 5	12	2-14	7	6- 1	13	9-15	19	6-12	11	4- 1	6	4- 8	6	5- 2	6	....
1915	32- 7	73	0- 6	2	1- 2	4	2- 1	6	1-14	5	8- 8	20	12- 8	26	2- 1	4	1-15	3	1- 4	2	0-12	1	....
Average	**36.7**	**89**	**3.0**	**14**	**3.7**	**12**	**4.2**	**12**	**4.3**	**11**	**5.8**	**13**	**8.2**	**16**	**3.2**	**6**	**1.5**	**2**	**1.4**	**2**	**1.5**	**2**	....
Cull fruits—																							
1912	42-11	139	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	34- 0	100	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	4- 1	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	22-12	56	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**25.9**	**79**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	330- 8	785	7-14	32	19-11	63	18- 0	52	52- 7	135	57- 5	131	71- 9	145	14-15	27	37- 6	48	8-10	13	0- 0	0	1
1913	231- 9	572	7- 5	29	16- 8	56	33- 6	94	28- 2	71	46- 7	102	35- 4	69	23-12	41	3- 5	5	2-12	4	0-12	1	3
1914	253- 6	559	4-14	24	5-15	20	29-15	84	43- 5	105	64-15	137	48- 9	90	29-15	49	5- 7	8	8- 6	11	8- 0	9	14
1915	224-14	472	0- 6	2	1-15	7	6-11	20	13-11	36	45-14	105	55- 6	114	45- 9	82	20-13	33	8-12	13	3- 1	4	2
Average	**260.1**	**597**	**5.1**	**22**	**11.0**	**37**	**22.0**	**63**	**34.4**	**87**	**53.6**	**119**	**52.7**	**105**	**28.5**	**50**	**16.7**	**24**	**7.1**	**10**	**3.0**	**4**	**5**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
95. Thomson strain:																							
Orchard grade—																							
1912	212–13	678	47– 6	188	65– 8	218	34– 8	103	45– 9	122	17– 2	41	2–12	6	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	154– 3	449	13–10	60	22–10	82	37– 5	113	29–12	81	35–10	83	10– 2	21	2–10	5	2– 8	4	0– 0	0	0– 0	0	....
1914	245– 7	672	11–11	50	30– 4	103	64–12	190	65– 6	168	54– 3	123	16–10	34	1– 3	2	1– 6	2	0– 0	0	0– 0	0	....
1915	234– 1	587	1– 2	5	8– 8	31	27–14	89	50– 4	139	65– 2	160	39– 2	85	31– 8	61	6– 8	11	2– 9	4	1– 8	2	....
Average	**211.6**	**597**	**18.5**	**76**	**31.7**	**109**	**41.1**	**124**	**47.7**	**127**	**43.0**	**102**	**17.2**	**37**	**8.8**	**17**	**2.6**	**4**	**0.6**	**1**	**0.4**	**0.5**	....
Standard grade—																							
1912	30–10	134	20– 0	101	2–14	11	4– 6	13	2– 8	7	0–14	2	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	19– 1	68	6– 4	32	3– 2	11	6– 1	17	1– 2	3	0–14	2	0– 8	1	1– 2	2	0– 0	0	0– 0	0	0– 0	0	....
1914	17–14	65	5–12	33	1–15	6	7– 7	20	0– 6	1	2– 6	5	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1915	49– 8	149	6– 7	30	3–11	14	15– 3	46	4–13	14	10– 6	27	5–11	12	2– 1	4	0–10	1	0–10	1	0– 0	0	....
Average	**29.3**	**104**	**9.6**	**49**	**2.9**	**11**	**8.3**	**24**	**2.2**	**6**	**3.6**	**9**	**1.5**	**3**	**0.8**	**2**	**0.2**	**0.3**	**0.2**	**0.3**	**0**	**0**	....
Cull fruits—																							
1912	10– 6	48	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1913	17– 1	79	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1914	4– 0	14	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1915	9– 8	30	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
Average	**10.2**	**43**	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
Total crop—																							
1912	253–13	860	67– 6	289	68– 6	229	38–14	116	48– 1	129	18– 0	43	2–12	6	0– 0	0	0– 0	0	0– 0	0	0– 0	0	7
1913	190– 5	596	19–14	92	25–12	93	43– 6	130	30–14	84	36– 8	85	10–10	22	3–12	7	2– 8	4	0– 0	0	0– 0	0	6
1914	267– 5	751	17– 7	83	32– 3	109	72– 3	210	65–12	169	56– 9	128	16–10	34	1– 3	2	1– 6	2	0– 0	0	0– 0	0	4
1915	293– 1	766	7– 9	35	12– 3	45	43– 1	135	55– 1	153	75– 8	187	44–13	97	33– 9	65	7– 2	12	3– 3	5	1– 8	2	18
Average	**251.1**	**743**	**28.1**	**125**	**34.6**	**119**	**49.4**	**148**	**49.9**	**134**	**46.6**	**111**	**18.7**	**40**	**9.6**	**19**	**2.8**	**5**	**0.8**	**1**	**0.4**	**0.5**	**9**

97. Washington strain:																							
Orchard grade—																							
1912	199- 9	550	23- 0	90	34-12	112	20- 2	58	53- 6	140	31- 7	74	31- 4	66	1- 2	2	4- 8	8	0- 0	0	0- 0	0	....
1913	136-11	362	2-11	12	9- 5	34	30- 4	94	28- 5	76	38- 8	90	20-10	43	7- 0	13	0- 0	0	0- 0	0	0- 0	0	....
1914	194- 3	420	0- 9	2	4- 8	15	14- 4	41	29-10	74	58- 7	130	49-10	96	34- 7	58	2- 0	3	0-12	1	0- 0	0	....
1915	224- 5	417	0- 0	0	0- 8	2	2-11	8	10- 0	27	21- 2	51	34- 2	72	62-12	117	36-11	60	32- 4	49	24- 3	31	....
Average	**188.7**	**437**	**6.6**	**26**	**12.3**	**41**	**16.8**	**50**	**30.3**	**79**	**37.4**	**86**	**33.9**	**69**	**26.3**	**48**	**10.8**	**18**	**8.3**	**13**	**6.0**	**8**	....
Standard grade—																							
1912	17- 7	64	7- 4	36	4- 2	13	2- 0	6	2- 0	5	0- 7	1	1- 1	2	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1913	44- 7	128	5- 6	22	6- 6	22	9-10	29	7- 1	19	8-10	21	5-12	12	1-10	3	0- 0	0	0- 0	0	0- 0	0	....
1914	80-11	203	6- 6	29	10- 1	33	12-14	35	7- 4	18	17- 2	39	12- 1	24	10-13	19	2-10	4	0- 0	0	1- 8	2	....
1915	44-14	106	2- 0	10	1- 5	5	2- 7	8	4- 5	12	7- 3	18	12- 6	27	7- 2	13	3- 8	6	3- 4	5	1- 6	2	....
Average	**46.9**	**125**	**5.3**	**24**	**5.5**	**18**	**6.7**	**20**	**5.2**	**14**	**8.3**	**20**	**7.8**	**16**	**5.0**	**9**	**1.5**	**3**	**0.8**	**1**	**0.7**	**1**	....
Cull fruits—																							
1912	9- 7	32	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1913	14-14	51	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1914	11- 4	45	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1915	20-14	53	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
Average	**14.1**	**45**	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
Total crop—																							
1912	226- 7	646	30- 4	126	38-14	125	22- 2	64	55- 6	145	31-14	75	32- 5	68	1-11	3	4- 8	8	0- 0	0	0- 0	0	6
1913	196- 0	541	8- 1	34	15-11	56	39-14	123	35- 6	95	47- 2	111	26- 6	55	8-10	16	0- 0	0	0- 0	0	0- 0	0	3
1914	286- 2	668	6-15	31	14- 9	48	27- 2	76	36-14	92	75- 9	169	61-11	120	45- 4	77	4-10	7	0-12	1	1- 8	2	7
1915	290- 1	576	2- 0	10	1-13	7	5- 2	16	14- 5	39	28- 5	69	46- 8	99	69-14	130	40- 3	66	35- 8	54	25- 9	33	9
Average	**249.7**	**608**	**11.8**	**50**	**17.7**	**59**	**23.6**	**70**	**35.5**	**93**	**45.7**	**106**	**41.7**	**86**	**31.4**	**57**	**12.3**	**20**	**9.1**	**14**	**6.8**	**9**	**6**
108. Sporting Thomson strain:																							
Orchard grade—																							
1912	157- 3	524	46- 0	197	40- 9	137	25- 6	75	26-11	72	12- 0	29	5-15	13	0- 0	0	0-10	1	0- 0	0	0- 0	0	....
1913	152- 2	453	10-10	47	29- 6	105	47- 0	140	37-80	98	23- 1	54	4- 0	8	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1914	220- 6	554	7- 1	28	15- 6	52	47- 0	134	58-10	147	60- 7	133	23-14	47	5-14	10	2- 2	3	0- 0	0	0- 0	0	....
1915	223- 9	626	7- 2	33	30- 2	110	46-13	147	51-14	144	39- 4	95	27-10	59	16- 2	31	1- 2	2	2- 0	3	1- 8	2	....
Average	**188.3**	**539**	**17.7**	**76**	**28.9**	**101**	**41.5**	**124**	**43.7**	**115**	**33.7**	**78**	**15.4**	**32**	**5.6**	**11**	**1.0**	**2**	**0.5**	**0.8**	**0.4**	**0.5**	....
Standard grade—																							
1912	26- 8	96	11-10	53	6- 1	20	4- 8	13	2- 6	6	1- 7	3	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	28- 1	92	6- 0	27	7- 6	25	7-14	23	3- 7	9	2- 6	6	1- 0	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	54-14	155	8- 8	40	7-11	24	14- 1	38	6- 8	16	8- 2	18	8- 4	16	1- 2	2	0-10	1	0- 0	0	0- 0	0	....
1915	58- 5	199	13- 7	64	12- 8	45	13- 4	42	6- 7	18	7- 8	19	3-10	8	1- 9	3	0- 0	0	0- 0	0	0- 0	0	....
Average	**41.9**	**136**	**9.9**	**46**	**8.4**	**29**	**9.9**	**29**	**4.7**	**12**	**4.9**	**12**	**3.3**	**7**	**0.7**	**1**	**0.2**	**0.3**	**.0**	**0**	**0**	**0**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
108. Sporting Thomson strain—Continued.																							
Cull fruits—																							
1912	16–10	64	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	16– 4	65	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	10– 3	45	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	15–13	46	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**14.7**	**55**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																							
1912	200– 5	684	57–10	250	46–10	157	29–14	88	29– 1	78	13– 7	32	6– 7	14	0– 0	0	0–10	1	0– 0	0	0– 0	0	25
1913	196– 7	610	16–10	74	36–12	130	54–14	163	40–15	107	25– 7	60	5– 0	10	0– 9	1	0– 0	0	0– 0	0	0– 0	0	33
1914	285– 7	754	15– 9	68	23– 1	76	61– 1	172	65– 2	163	68– 9	151	32– 2	63	7– 0	12	2–12	4	0– 0	0	0– 0	0	54
1915	297–11	871	20– 9	97	42–10	155	60– 1	189	58– 5	162	46–12	114	31– 4	67	17–11	34	1– 2	2	2– 0	3	1– 8	2	63
Average	**245.0**	**730**	**27.6**	**122**	**37.3**	**130**	**51.5**	**153**	**48.4**	**128**	**38.5**	**89**	**18.7**	**39**	**6.3**	**12**	**1.1**	**2**	**0.5**	**0.8**	**0.4**	**0.5**	**44**
123. Washington strain:																							
Orchard grade—																							
1912	194– 5	424	3–10	14	9– 6	29	8– 6	24	27– 2	70	29– 3	67	55–10	115	14–13	28	35– 4	61	5–13	9	5– 2	7	....
1913	152–13	361	2– 5	9	6–11	23	21– 2	62	29– 6	75	42–10	97	29–12	59	15– 0	27	3– 3	5	2–12	4	0– 0	0	....
1914	178– 2	349	0– 0	0	1– 3	4	12– 1	34	19– 5	47	46– 1	96	46–10	85	38–13	63	10–14	16	1– 8	2	1–11	2	....
1915	214– 1	411	0– 0	0	0– 0	0	7– 4	22	8– 8	23	29–15	70	43– 4	89	60– 2	109	28–10	47	23–14	35	12– 8	16	....
Average	**184.8**	**386**	**1.5**	**6**	**4.3**	**14**	**12.2**	**36**	**21.1**	**54**	**37.0**	**83**	**43.8**	**87**	**32.2**	**57**	**19.5**	**32**	**8.5**	**13**	**4.8**	**6**	....
Standard grade—																							
1912	15–14	37	1– 7	6	0–11	2	1– 3	3	3–11	9	3– 2	7	2–11	5	1–12	3	1– 5	2	0– 0	0	0– 0	0	....
1913	21–11	59	2– 4	9	4–14	17	2–10	8	2–11	7	2– 4	5	5– 2	10	1– 3	2	0– 0	0	0–11	1	0– 0	0	....
1914	47– 0	106	1–14	8	3–10	11	6– 9	17	7– 6	17	10– 8	23	9– 4	18	3– 6	6	2– 1	3	1– 8	2	0–14	1	....
1915	44– 7	97	0–12	4	0– 5	1	2–14	9	3– 0	8	9– 2	22	12– 2	25	11– 4	21	4– 2	6	0– 0	0	0–14	1	....
Average	**32.3**	**75**	**1.6**	**7**	**2.4**	**8**	**3.3**	**9**	**4.2**	**10**	**6.3**	**14**	**7.3**	**15**	**4.4**	**8**	**1.9**	**3**	**0.5**	**0.8**	**0.4**	**0.5**	....

Cull fruits—																							
1912	15- 2	45	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	35- 4	103	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	11-13	24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	29-12	60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**23.0**	**58**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	225- 5	506	5- 1	20	10- 1	31	9- 9	27	30-13	79	32- 5	74	58- 5	120	16- 9	31	36- 9	63	5-13	9	5- 2	7	2
1913	209-12	523	4- 9	18	11- 9	40	23-12	70	32- 1	82	44-14	102	34-14	69	16- 3	29	3- 3	5	3- 7	5	0- 0	0	0
1914	236-15	479	1-14	8	4-13	15	18-10	51	26-11	64	56- 9	119	55-14	103	42- 3	69	12-15	19	3- 0	4	2- 9	3	5
1915	288- 4	568	0-12	4	0- 5	1	10- 2	31	11- 8	31	39- 1	92	55- 6	114	71- 6	130	32-12	53	23-14	35	13- 6	17	6
Average	**240.1**	**519**	**3.1**	**13**	**6.7**	**22**	**15.5**	**45**	**25.3**	**64**	**43.2**	**97**	**51.1**	**102**	**36.6**	**65**	**21.4**	**35**	**9.0**	**13**	**5.3**	**7**	**3**
155. Thomson strain:																							
Orchard grade—																							
1912	208-13	687	50- 3	209	63-14	216	36-13	111	41-10	112	11- 5	28	5- 0	11	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	165- 8	423	2-12	11	6- 8	22	32- 2	98	45- 8	119	51-11	119	22-10	46	4- 5	8	0- 0	0	0- 0	0	0- 0	0	....
1914	208-10	556	7-11	35	18-10	64	42- 6	124	60- 4	156	61-11	141	14- 2	29	3-14	7	0- 0	0	0- 0	0	0- 0	0	....
1915	206-10	482	1-10	7	8- 3	30	19-15	61	29-12	80	45-12	109	44-10	95	31- 3	59	15- 2	25	8- 3	13	2- 4	3	....
Average	**197.4**	**537**	**15.6**	**66**	**24.3**	**83**	**32.8**	**99**	**44.3**	**117**	**42.6**	**99**	**21.6**	**45**	**9.8**	**19**	**3.8**	**6**	**2.0**	**3**	**0.6**	**0.8**	....
Standard grade—																							
1912	12- 2	47	6-10	29	4- 2	14	1- 6	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	22-10	65	2- 7	11	5- 7	18	3- 8	10	3- 7	9	5- 4	12	2- 0	4	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1914	17- 6	59	4- 2	21	4-14	16	2-15	9	2-12	7	2-11	6	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	47- 0	126	3- 6	19	3-14	14	7- 6	22	4- 0	11	9- 0	22	13-10	29	2-12	5	0-10	1	0-11	1	1-11	2	....
Average	**24.8**	**74**	**4.1**	**20**	**4.6**	**16**	**3.8**	**11**	**2.5**	**7**	**4.2**	**10**	**3.9**	**8**	**0.8**	**2**	**0.2**	**0.3**	**0.2**	**0.3**	**0.4**	**0.5**	....
Cull fruits—																							
1912	5- 4	29	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	9- 8	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	11- 8	48	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	7- 7	21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**8.4**	**34**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	226- 3	763	56-13	238	68- 0	230	38- 3	115	41-10	112	11- 5	28	5- 0	11	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0
1913	197-10	524	5- 3	22	11-15	40	35-10	108	48-15	128	56-15	131	24-10	50	4-14	9	0- 0	0	0- 0	0	0- 0	0	1
1914	237- 8	663	11-13	56	23- 8	80	45- 5	133	63- 0	163	64- 6	147	14- 2	29	3-14	7	0- 0	0	0- 0	0	0- 0	0	2
1915	261- 1	629	5- 0	26	12- 1	44	27- 5	83	33-12	91	54-12	131	58- 4	124	33-15	64	15-12	26	8-14	14	3-15	5	7
Average	**230.6**	**645**	**19.7**	**86**	**28.9**	**99**	**36.6**	**110**	**46.8**	**124**	**46.8**	**109**	**25.5**	**54**	**10.7**	**20**	**3.9**	**7**	**2.2**	**4**	**1.0**	**1**	**3**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
156. Washington strain:																							
Orchard grade—																							
1912	249– 0	563	5– 6	19	17– 0	52	19–15	54	60– 7	148	56–13	124	57– 6	113	4– 6	8	20– 4	34	7– 7	11	0– 0	0	....
1913	62–15	142	0– 0	0	0– 8	2	2–10	8	10– 4	28	18– 5	44	15–14	33	10– 5	19	3–11	6	0– 0	0	1– 6	2	....
1914	220– 1	438	1– 3	5	5– 0	16	14–12	42	19–15	49	58–10	125	53– 2	99	43– 8	70	15– 2	21	6–15	9	1–14	2	....
1915	162–13	277	0– 0	0	0– 0	0	1– 0	3	4– 4	11	11– 4	25	31– 4	62	46– 9	81	23– 3	35	27– 7	38	17– 4	22	....
Average	**173.7**	**355**	**1.6**	**6**	**5.6**	**18**	**9.6**	**27**	**23.7**	**59**	**36.3**	**80**	**39.4**	**77**	**26.2**	**45**	**15.6**	**24**	**10.5**	**15**	**5.1**	**7**	....
Standard grade—																							
1912	26– 5	74	5– 9	23	3– 5	10	4– 6	12	4–14	12	4–15	11	2– 1	4	0– 0	0	1– 3	2	0– 0	0	0– 0	0	....
1913	29– 4	74	1– 8	6	1– 2	4	5– 4	16	5– 4	14	7– 5	17	4– 4	9	2– 2	4	1– 2	2	0–10	1	0–11	1	....
1914	15–11	35	0– 8	2	0–10	2	3– 0	8	2– 0	5	3– 3	7	2– 7	5	2– 8	4	0– 0	0	1– 7	2	0– 0	0	....
1915	38– 2	73	0– 0	0	0– 0	0	0–10	2	1– 2	3	5–14	14	12– 2	25	7–15	14	3– 3	5	5– 8	8	1–12	2	....
Average	**27.3**	**64**	**1.9**	**8**	**1.3**	**4**	**3.3**	**10**	**3.3**	**9**	**5.3**	**12**	**5.2**	**11**	**3.1**	**6**	**1.4**	**2**	**1.9**	**3**	**0.6**	**0.8**	....
Cull fruits—																							
1912	13– 7	52	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	76– 9	280	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	3–13	14	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	20– 9	56	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**28.6**	**101**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																							
1912	288–12	689	10–15	42	20– 5	62	24– 5	66	65– 5	160	61–12	135	59– 7	117	4– 6	8	21– 7	36	7– 7	11	0– 0	0	1
1913	168–12	496	1– 8	6	1–10	6	7–14	24	15– 8	42	25–10	61	20– 2	42	12– 7	23	4–13	8	0–10	1	2– 1	3	3
1914	239– 9	487	1–11	7	5–10	18	17–12	50	21–15	54	61–13	132	55– 9	104	46– 0	74	15– 2	21	8– 6	11	1–14	2	8
1915	221– 8	406	0– 0	0	0– 0	0	1–10	5	5– 6	14	17– 2	39	43– 6	87	54– 8	95	26– 6	40	32–15	46	19–10	24	5
Average	**229.6**	**520**	**3.5**	**14**	**6.9**	**22**	**12.9**	**36**	**27.0**	**68**	**41.6**	**92**	**44.6**	**87**	**29.3**	**50**	**16.9**	**26**	**12.3**	**17**	**5.9**	**7**	**4**

185. Washington strain:																						
Orchard grade—																						
1912	203-3	511	10-12	41	18-12	60	21-2	61	52-8	135	46-9	107	40-5	83	4-10	9	7-6	13	1-3	2	0-0	0	....
1913	96-6	218	2-8	10	3-8	12	12-15	38	14-5	36	19-5	43	19-12	39	15-10	28	4-8	7	2-3	3	1-12	2	....
1914	164-11	372	0-7	2	6-10	22	24-6	71	30-2	75	46-4	100	33-13	64	21-12	36	0-10	1	0-11	1	0-0	0	....
1915	196-0	449	0-7	2	4-14	18	16-3	49	27-2	72	49-12	119	44-0	93	36-5	68	12-10	21	3-3	5	1-8	2	....
Average	**165.1**	**388**	**3.5**	**14**	**8.4**	**28**	**18.7**	**55**	**31.0**	**80**	**40.5**	**92**	**34.5**	**70**	**19.6**	**35**	**6.3**	**11**	**1.8**	**3**	**0.8**	**1**	....
Standard grade—																						
1912	25-0	73	5-9	23	3-2	10	4-13	14	5-5	13	3-3	7	2-7	5	0-0	0	0-9	1	0-0	0	0-0	0	....
1913	31-0	81	3-4	14	4-11	17	3-8	10	4-15	13	3-4	7	6-2	12	2-7	4	1-15	3	0-0	0	0-14	1	....
1914	30-12	90	5-8	27	2-10	9	8-12	24	3-6	8	5-14	13	3-15	8	0-0	0	0-0	0	0-11	1	0-0	0	....
1915	46-10	118	1-10	8	4-10	17	3-14	12	4-0	11	12-10	31	12-6	26	4-6	8	1-12	3	1-6	2	0-0	0	....
Average	**33.3**	**91**	**4.0**	**18**	**3.8**	**13**	**5.2**	**15**	**4.4**	**11**	**6.2**	**15**	**6.2**	**13**	**1.7**	**3**	**1.1**	**2**	**0.5**	**0.8**	**0.2**	**0.3**	....
Cull fruits—																						
1912	23-2	89	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	34-13	108	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	5-4	24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	23-14	81	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**21.8**	**76**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1912	251-5	673	16-5	64	21-14	70	25-15	75	57-13	148	49-12	114	42-12	88	4-10	9	7-15	14	1-3	2	0-0	0	0
1913	162-3	407	5-12	24	8-3	29	16-7	48	19-4	49	22-9	50	25-14	51	18-1	32	6-7	10	2-3	3	2-10	3	0
1914	200-11	486	5-15	29	9-4	31	33-2	95	33-8	83	52-2	113	37-12	72	21-12	36	0-10	1	1-6	2	0-0	0	3
1915	266-8	648	2-1	10	9-8	35	20-1	61	31-2	83	62-6	150	56-6	119	40-11	76	14-6	24	4-9	7	1-8	2	0
Average	**220.2**	**554**	**7.5**	**32**	**12.2**	**41**	**23.9**	**70**	**35.4**	**91**	**46.7**	**107**	**40.7**	**83**	**21.3**	**38**	**7.3**	**12**	**2.3**	**4**	**1.0**	**1**	**0.8**
202. Golden Nugget strain:																						
Orchard grade—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	127-4	248	1-4	5	5-2	16	13-4	37	16-10	39	28-14	61	28-14	42	20-10	32	5-15	8	4-0	5	2-11	3	....
1915	144-10	264	0-0	0	0-8	2	8-13	26	8-5	22	19-6	45	20-7	42	24-6	43	15-14	25	14-12	21	32-2	38	....
Average	**135.9**	**256**	**0.6**	**3**	**2.8**	**9**	**11.0**	**32**	**12.5**	**31**	**24.1**	**53**	**24.7**	**42**	**22.5**	**38**	**10.9**	**17**	**9.4**	**13**	**17.4**	**21**	....
Standard grade—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	24-11	62	1-5	6	4-4	14	5-2	14	3-6	8	3-12	8	5-5	10	0-0	0	0-0	0	1-9	2	0-0	0	....
1915	40-13	87	0-11	3	1-6	5	2-11	8	4-15	13	7-8	18	8-1	17	3-14	7	4-7	7	3-10	5	3-10	4	....
Average	**32.8**	**75**	**1.0**	**5**	**2.8**	**10**	**3.9**	**11**	**4.2**	**11**	**5.6**	**13**	**6.7**	**14**	**1.9**	**4**	**2.2**	**4**	**2.6**	**4**	**1.8**	**2**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
202. Golden Nugget strain—Continued.																							
Cull fruits—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	11–11	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	83– 1	236	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**47.4**	**136**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	163–10	346	2– 9	11	9– 6	30	18– 6	51	20– 0	47	32–10	69	34– 3	52	20–10	32	5–15	8	5– 9	7	2–11	3	9
1915	268– 8	587	0–11	3	1–15	7	11– 8	34	13– 4	35	26–14	63	28– 8	59	28– 4	50	20– 5	32	18– 6	26	35–12	42	43
Average	**216.1**	**467**	**1.6**	**7**	**5.7**	**19**	**14.9**	**43**	**16.6**	**41**	**29.8**	**66**	**31.3**	**56**	**24.4**	**41**	**13.1**	**20**	**12.0**	**16**	**19.2**	**23**	**26**
224. Washington strain:																							
Orchard grade—																							
1912	192– 1	429	5– 2	18	12– 2	37	16–11	46	38– 5	94	32– 8	71	55–12	110	4– 7	8	22– 3	38	2–10	4	2– 5	3	....
1913	160– 8	430	7–12	32	14–10	53	38– 6	117	26–10	70	41– 2	96	19– 8	40	11– 4	20	1– 4	2	0– 0	0	0– 0	0	....
1914	228– 7	524	1– 8	6	8– 6	27	31– 2	87	47– 8	119	74–10	164	47– 4	90	16– 2	28	1–15	3	0– 0	0	0– 0	0	....
1915	105– 2	200	0– 0	0	0– 9	2	3– 7	10	5–11	14	18– 1	40	23– 9	47	33– 7	57	13–0	20	5– 0	7	2– 6	3	....
Average	**171.5**	**396**	**3.6**	**14**	**8.9**	**30**	**22.4**	**65**	**29.5**	**74**	**41.6**	**93**	**36.5**	**72**	**16.3**	**28**	**9.6**	**16**	**1.9**	**3**	**1.2**	**2**	....
Standard grade—																							
1912	13– 0	35	2– 0	9	0–15	3	2– 4	6	3– 7	8	1– 5	3	2– 8	5	0– 0	0	0– 9	1	0– 0	0	0– 0	0	....
1913	31– 9	96	3–14	17	8– 4	28	9–12	28	2–10	7	4– 2	10	2– 6	5	0– 9	1	0– 0	0	0– 0	0	0– 0	0	....
1914	17– 6	57	3–12	20	3–12	12	4– 2	12	2– 6	6	2– 6	5	1– 0	2	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1915	37– 2	67	0– 0	0	0– 4	1	0–11	2	1– 4	3	3– 8	8	5– 3	11	11– 0	19	5– 8	9	7– 7	11	2– 5	3	....
Average	**24.8**	**64**	**2.4**	**12**	**3.3**	**11**	**4.2**	**12**	**2.4**	**6**	**2.8**	**7**	**2.8**	**6**	**2.9**	**5**	**1.5**	**3**	**1.9**	**3**	**0.6**	**0.8**	....

Cull fruits—																							
1912	13-12	53	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	17- 9	62	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	13-12	57	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	9- 9	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**13.7**	**51**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	218-13	517	7- 2	27	13- 1	40	18-15	52	41-12	102	33-13	74	58- 4	115	4- 7	8	22-12	39	2-10	4	2- 5	3	2
1913	209-10	588	11-10	49	22-14	81	48- 2	145	29- 4	77	45- 4	106	21-14	45	11-13	21	1- 4	2	0- 0	0	0- 0	0	0
1914	259- 9	638	5- 4	26	12- 2	39	35- 4	99	49-14	125	77- 0	169	48- 4	92	16- 2	28	1-15	3	0- 0	0	0- 0	0	6
1915	151-13	299	0- 0	0	0-13	3	4- 2	12	6-15	17	21- 9	48	28-12	58	44- 7	76	18- 8	29	12- 7	18	4-11	6	3
Average	**210.0**	**511**	**6.0**	**26**	**12.2**	**41**	**26.6**	**77**	**32.0**	**80**	**4.44**	**99**	**39.3**	**78**	**19.2**	**33**	**11.1**	**18**	**3.8**	**6**	**1.8**	**2**	**3**
247; Thomson strain:																							
Orchard grade—																							
1912	162-10	603	80- 2	340	50- 5	172	19- 3	57	11- 2	31	1- 4	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	109-14	301	3- 8	14	14- 0	48	29- 4	87	35- 0	90	22- 6	51	4- 0	8	1-12	3	0- 0	0	0- 0	0	0- 0	0	....
1914	168-13	455	2-14	13	17- 2	58	47- 0	139	46- 7	120	44- 7	103	10- 6	21	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1915	228- 8	600	1-11	8	9- 9	36	44- 2	138	54- 2	150	60-14	150	33- 3	72	17- 2	33	5- 4	9	1-14	3	0-11	1	....
Average	**167.3**	**490**	**22.0**	**94**	**22.8**	**79**	**34.9**	**105**	**33.7**	**98**	**32.2**	**77**	**11.9**	**25**	**4.9**	**9**	**1.3**	**2**	**0.5**	**0.8**	**0.2**	**0.3**	....
Standard grade—																							
1912	20- 4	97	14-15	78	4-15	18	0- 0	0	0- 6	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	18- 7	63	4-14	23	5-10	19	3-10	10	2-14	8	0- 7	1	1- 0	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	36-13	113	5- 4	26	7-10	25	10-12	31	3- 6	9	5- 6	13	2-12	6	1-11	3	0- 0	0	0- 0	0	0- 0	0	....
1915	25-10	77	2- 2	12	3- 0	11	6- 8	20	4- 6	12	6- 0	15	2- 0	4	1-10	3	0- 0	0	0- 0	0	0- 0	0	....
Average	**25.3**	**88**	**6.8**	**35**	**5.3**	**18**	**5.2**	**15**	**2.8**	**8**	**3.0**	**7**	**1.4**	**3**	**0.8**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	....
Cull fruits—																							
1912	5- 8	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	9- 8	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	6- 6	41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	7-13	23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**7.3**	**34**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	187-12	730	95- 1	418	55- 4	190	19- 3	57	11- 8	32	1- 4	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	7
1913	137-13	404	8- 6	37	19-10	67	32-14	97	37-14	98	22-13	52	5- 0	10	1-12	3	0- 0	0	0- 0	0	0- 0	0	0
1914	212- 0	608	8- 2	39	24-12	83	57-12	170	49-13	129	49-13	116	13- 2	27	2- 4	4	0- 0	0	0- 0	0	0- 0	0	4
1915	261-15	700	3-13	20	12- 9	47	50-10	158	58- 8	162	66-14	165	35- 3	76	18-12	36	5- 4	9	1-14	3	0-11	1	4
Average	**199.9**	**611**	**28.8**	**129**	**28.0**	**97**	**40.1**	**121**	**39.4**	**105**	**35.2**	**84**	**13.3**	**28**	**5.7**	**11**	**1.3**	**2**	**0.5**	**0.8**	**0.2**	**0.3**	**4**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
248. Washington strain:																							
Orchard grade—																							
1912	208- 3	593	15- 5	57	32-10	104	30- 6	86	64- 0	163	40-15	93	17- 2	76	4- 2	8	3-11	6	0- 0	0	0- 0	0	....
1913	136-14	384	6- 3	26	17- 1	61	41- 5	125	27- 2	71	31- 3	73	9-10	20	4- 6	8	0- 0	0	0- 0	0	0- 0	0	....
1914	150-11	349	1- 0	4	5- 0	17	21- 1	59	36- 8	91	47- 8	104	29-14	58	7-13	13	1- 4	2	0-11	1	0- 0	0	....
1915	159- 8	359	0- 0	0	2- 4	8	12- 0	37	22-10	60	38-14	92	38-14	82	31-10	59	7- 3	12	6- 1	9	0- 0	0	....
Average	**163.8**	**421**	**5.6**	**22**	**14.2**	**48**	**26.2**	**77**	**37.6**	**96**	**39.6**	**91**	**23.9**	**59**	**12.0**	**22**	**3.0**	**5**	**1.7**	**3**	**0**	**0**	....
Standard grade—																							
1912	20- 2	69	7- 6	34	3- 2	10	2-12	8	4-11	12	1-11	4	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	20- 6	74	7- 6	34	5-12	20	5- 2	15	0-12	2	0-14	2	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	20- 1	65	3-11	19	4- 7	14	8- 3	23	1- 8	4	1- 4	3	1- 0	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	23- 4	64	2- 4	10	1-10	6	4-10	14	1- 8	4	6- 0	15	5-10	12	1- 1	2	0- 9	1	0- 0	0	0- 0	0	....
Average	**21.0**	**68**	**5.2**	**24**	**3.7**	**13**	**5.2**	**15**	**2.1**	**6**	**2.5**	**6**	**1.9**	**4**	**0.3**	**0.5**	**0.1**	**0.3**	**0**	**0**	**0**	**0**	....
Cull fruits—																							
1912	21- 7	76	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	19- 1	76	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	3-15	23	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	15-11	46	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**15.0**	**55**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																							
1912	249-12	738	22-11	91	35-12	114	33- 2	94	68-11	175	42-10	97	17-10	77	4- 2	8	3-11	6	0- 0	0	0- 0	0	1
1913	176- 5	534	13- 9	60	22-13	81	46- 7	140	27-14	73	32- 1	75	10- 2	21	4- 6	8	0- 0	0	0- 0	0	0- 0	0	1
1914	174-11	437	4-11	23	9- 7	31	29- 4	82	38- 0	95	48-12	107	30-14	60	7-13	13	1- 4	2	0-11	1	0- 0	0	1
1915	198- 7	469	2- 4	10	3-14	14	16-10	51	24- 2	64	44-14	107	44- 8	94	32-11	61	7-12	13	6- 1	9	0- 0	0	2
Average	**199.8**	**545**	**10.8**	**46**	**18.0**	**60**	**31.4**	**92**	**39.7**	**102**	**42.1**	**97**	**25.8**	**63**	**12.3**	**23**	**3.2**	**5**	**1.7**	**3**	**0**	**0**	**1**

249. Golden Nugget strain:																						
Orchard grade—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	160- 6	412	6-14	27	24- 2	77	39-14	108	38- 3	94	39- 6	84	11- 6	21	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1915	112- 1	245	0- 0	0	2- 2	7	12- 2	34	13-11	35	29-14	67	31- 8	63	14-15	27	5-11	9	2- 2	3	0- 0	0	....
Average	**136.2**	**329**	**3.4**	**14**	**13.1**	**42**	**26.0**	**71**	**25.9**	**65**	**34.6**	**76**	**21.4**	**42**	**7.8**	**14**	**2.8**	**5**	**1.1**	**2**	**0**	**0**	....
Standard grade—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	17-12	54	3-12	17	3-10	12	4-14	13	2- 2	5	1-14	4	0-15	2	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1915	43- 5	100	1- 4	7	1- 4	4	4-12	13	4- 6	11	10- 4	24	13- 9	28	3-15	7	2- 8	4	1- 7	2	0- 0	0	....
Average	**30.5**	**77**	**2.5**	**12**	**2.4**	**8**	**4.8**	**13**	**3.3**	**8**	**6.1**	**14**	**7.3**	**15**	**2.3**	**4**	**1.3**	**2**	**0.7**	**1**	**0**	**0**	....
Cull fruits—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	10- 0	42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	55- 6	175	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**32.7**	**109**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	188- 2	508	10-10	44	27-12	89	44-12	121	40- 5	99	41- 4	88	12- 5	23	1- 2	2	0- 0	0	0- 0	0	0- 0	0	10
1915	210-12	520	1- 4	7	3- 6	11	16-14	47	18- 1	46	40- 2	91	45- 1	91	18-14	34	8- 3	13	3- 9	5	0- 0	0	9
Average	**199.4**	**514**	**5.9**	**26**	**15.6**	**50**	**30.8**	**84**	**29.2**	**73**	**40.7**	**90**	**28.7**	**57**	**10.0**	**18**	**4.1**	**7**	**1.8**	**3**	**0**	**0**	**10**
269. Washington strain:																						
Orchard grade—																						
1912	232-15	569	8-13	35	16-11	52	23-14	69	50- 3	132	42- 6	99	56- 1	117	4-11	9	23-12	49	6- 8	7	0- 0	0	....
1913	113-14	285	3- 8	15	9-12	33	22- 9	67	18- 2	46	25- 6	59	15- 9	32	14- 5	26	2-10	4	2- 1	3	0- 0	0	....
1914	157- 3	412	3-12	15	16-12	56	40- 4	115	43-10	111	38- 2	86	13- 8	27	0- 9	1	0-10	1	0- 0	0	0- 0	0	....
1915	113-14	226	0- 0	0	0-14	3	5- 2	15	7- 6	19	22- 2	50	28- 2	57	29- 4	51	9- 8	15	8- 6	12	3- 2	4	....
Average	**154.5**	**373**	**4.0**	**16**	**11.0**	**36**	**23.0**	**67**	**29.8**	**77**	**32.0**	**74**	**28.3**	**58**	**12.2**	**22**	**9.1**	**17**	**4.2**	**6**	**0.8**	**1**	....
Standard grade—																						
1912	36-12	114	9- 4	44	4- 1	14	4-14	14	6- 0	15	6-10	15	2- 4	5	2- 8	5	1- 3	2	0- 0	0	0- 0	0	....
1913	38- 5	110	6- 5	26	8- 6	28	7-12	22	4- 6	11	5- 8	12	3- 1	6	1-10	3	0-10	1	0-11	1	0- 0	0	....
1914	20-11	71	6-14	34	2- 6	8	6-10	18	2- 6	6	0-14	2	1- 0	2	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1915	14- 5	33	0- 6	2	0- 5	1	1- 4	4	1- 0	3	3- 0	7	5- 0	10	1-10	3	1-11	3	0- 0	0	0- 0	0	....
Average	**27.5**	**82**	**5.7**	**27**	**3.8**	**13**	**5.1**	**15**	**3.4**	**9**	**4.0**	**9**	**2.8**	**6**	**1.6**	**3**	**0.9**	**2**	**0.2**	**0.3**	**0**	**0**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
269. Washington strain—Con.																							
Cull fruits—																							
1912	16–14	59	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	11– 2	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	4– 4	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	2– 7	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**8.7**	**34**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	286– 9	742	18– 1	79	20–12	66	28–12	83	56– 3	147	49– 0	114	58– 5	122	7– 3	14	24–15	51	6– 8	7	0– 0	0	5
1913	163– 5	435	9–13	41	18– 2	61	30– 5	89	22– 8	57	30–14	71	18–10	38	15–15	29	3– 4	5	2–12	4	0– 0	0	0
1914	182– 2	513	10–10	49	19– 2	64	46–14	133	46– 0	117	39– 0	88	14– 8	29	1– 2	2	0–10	1	0– 0	0	0– 0	0	8
1915	130–10	267	0– 6	2	1– 3	4	6– 6	19	8– 7	22	25– 2	57	33– 3	67	30–14	54	11– 3	18	8– 6	12	3– 2	4	1
Average	**190.7**	**489**	**9.7**	**43**	**14.8**	**49**	**28.1**	**81**	**33.3**	**86**	**36.0**	**83**	**31.2**	**64**	**13.8**	**25**	**10.0**	**19**	**4.4**	**6**	**0.8**	**1**	**4**
270. Golden Nugget strain:																							
Orchard grade—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	75–11	139	0– 3	1	1– 9	5	3–10	10	7–14	19	11– 8	24	16– 0	29	21– 2	33	8– 0	11	3– 3	4	2–10	3	....
1915	144–10	275	0– 3	1	0–14	3	6– 1	18	10–12	28	21–12	49	23– 1	47	37– 5	65	18– 6	29	12– 8	18	13–12	17	....
Average	**110.2**	**207**	**0.2**	**1**	**1.2**	**4**	**4.8**	**14**	**9.3**	**24**	**16.6**	**37**	**19.5**	**38**	**29.2**	**49**	**13.2**	**20**	**7.8**	**11**	**8.2**	**10**	....
Standard grade—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	18– 2	40	0–12	4	1– 2	3	2– 7	7	1– 4	3	3–13	8	4– 2	8	3–14	6	0– 0	0	0–12	1	0– 0	0	....
1915	33– 0	64	0– 3	1	2– 0	7	2– 5	7	1–10	4	2–15	7	5– 0	10	5–11	10	2– 9	4	5– 9	8	5– 2	6	....
Average	**25.6**	**52**	**0.5**	**3**	**1.6**	**5**	**2.4**	**7**	**1.4**	**4**	**3.4**	**8**	**4.6**	**9**	**4.8**	**8**	**1.3**	**2**	**3.2**	**5**	**2.6**	**3**	....

Cull fruits—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	6–6	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	100–8	265	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**53.4**	**142**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	100–3	197	0–15	5	2–11	8	6–1	17	9–2	22	15–5	32	20–2	37	25–0	39	8–0	11	3–15	5	2–10	3	7
1915	278–2	604	0–6	2	2–14	10	8–6	25	12–6	32	24–11	56	28–1	57	43–0	75	20–15	33	18–1	26	18–14	23	39
Average	**189.2**	**401**	**0.7**	**4**	**2.8**	**9**	**7.2**	**21**	**10.8**	**27**	**20.0**	**44**	**24.1**	**47**	**34.0**	**57**	**14.5**	**22**	**11.0**	**16**	**10.8**	**13**	**23**
293. Washington strain:																						
Orchard grade—																						
1912	224–15	508	3–3	12	13–13	43	20–13	58	48–13	121	47–5	104	58–10	115	4–15	9	24–11	42	2–12	4	0–0	0	....
1913	102–1	219	0–4	1	3–2	10	12–14	35	14–1	35	25–5	56	17–1	34	18–6	32	5–14	9	3–8	5	1–10	2	....
1914	121–14	266	0–4	1	6–2	20	12–7	35	26–5	64	35–14	76	22–10	42	11–12	19	4–4	6	1–8	2	0–12	1	....
1915	152–8	355	0–0	0	4–6	15	15–3	45	35–0	91	45–8	105	23–12	49	20–3	37	4–4	7	2–12	4	1–8	2	....
Average	**150.3**	**337**	**0.9**	**4**	**6.9**	**22**	**15.3**	**43**	**31.0**	**78**	**38.5**	**85**	**30.5**	**60**	**13.8**	**24**	**9.8**	**16**	**2.6**	**4**	**1.0**	**1**	....
Standard grade—																						
1912	27–15	74	5–10	21	2–8	8	2–12	8	5–14	14	5–9	12	5–0	10	0–0	0	0–10	1	0–0	0	0–0	0	....
1913	18–11	44	0–14	3	1–14	6	2–8	7	2–0	5	6–12	15	2–3	4	1–3	2	0–10	1	0–11	1	0–0	0	....
1914	18–4	48	3–4	15	1–3	4	4–3	11	1–5	3	1–14	4	3–14	7	1–1	2	0–0	0	1–8	2	0–0	0	....
1915	18–13	52	1–15	10	0–14	3	4–6	13	3–0	8	2–2	5	4–4	9	2–4	4	0–0	0	0–0	0	0–0	0	....
Average	**20.9**	**55**	**2.9**	**12**	**1.6**	**5**	**3.5**	**10**	**3.0**	**8**	**4.1**	**9**	**3.8**	**8**	**1.1**	**2**	**0.3**	**0.5**	**0.5**	**0.8**	**0**	**0**	....
Cull fruits—																						
1912	17–9	65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	9–11	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	4–3	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	4–10	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**9.0**	**33**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																						
1912	270–7	647	8–13	33	16–5	51	23–9	66	54–11	135	52–14	116	63–10	125	4–15	9	25–5	43	2–12	4	0–0	0	3
1913	130–7	295	1–2	4	5–0	16	15–6	42	16–1	40	32–1	71	19–4	38	19–9	34	6–8	10	4–3	6	1–10	2	0
1914	144–5	331	3–8	16	7–5	24	16–10	46	27–10	67	37–12	80	26–8	49	12–13	21	4–4	6	3–0	4	0–12	1	...2
1915	175–15	425	1–15	10	5–4	18	19–9	58	38–0	99	47–10	110	28–0	58	22–7	41	4–4	7	2–12	4	1–8	2	...1
Average	**180.3**	**425**	**3.8**	**16**	**8.5**	**27**	**18.8**	**53**	**34.1**	**85**	**42.6**	**94**	**34.3**	**68**	**14.9**	**26**	**10.1**	**17**	**3.2**	**5**	**1.0**	**1**	**2**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
318. Washington strain:																							
Orchard grade—																							
1912	125– 3	286	0– 3	1	0–11	3	6–14	20	17– 9	49	27– 6	67	36–14	80	23–10	46	8– 2	14	3– 1	5	0–13	1	....
1913	53– 7	122	0– 0	0	0– 8	2	2–12	9	8– 3	23	9–12	24	10– 0	22	7–13	16	7–15	15	5–14	10	0–10	1	....
1914	191–15	524	8–10	39	31– 5	107	45– 3	132	33– 8	87	36–10	85	24–10	51	9–11	18	2– 6	4	0– 0	0	0– 0	0	....
1915	126– 0	256	0– 0	0	0– 8	2	8– 9	24	12–12	32	25–10	57	35– 4	70	17–11	32	14–15	24	8– 3	12	2– 8	3	....
Average	**124.1**	**297**	**2.2**	**10**	**8.3**	**29**	**15.8**	**46**	**18.0**	**48**	**24.8**	**58**	**26.7**	**56**	**14.7**	**28**	**8.3**	**14**	**4.3**	**7**	**1.0**	**2**	....
Standard grade—																							
1912	9–12	25	0– 6	2	0– 0	0	0–14	3	2– 3	6	3– 3	8	0– 0	0	0–14	2	1–10	3	0–10	1	0– 0	0	....
1913	11–12	30	0– 0	0	0– 0	0	1– 3	4	3– 6	10	3– 9	9	1– 6	3	0– 9	1	1–11	3	0– 0	0	0– 0	0	....
1914	31– 1	105	7– 6	36	6– 8	24	7– 4	22	4–10	12	1–12	4	3– 9	7	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1915	27– 9	62	1– 1	4	1– 0	3	3– 0	8	5–12	14	7–14	17	7– 0	13	0– 9	1	0–10	1	0–11	1	0– 0	0	....
Average	**20.0**	**55**	**2.2**	**11**	**1.9**	**7**	**3.1**	**9**	**4.0**	**11**	**4.1**	**10**	**3.0**	**6**	**0.5**	**1**	**1.0**	**2**	**0.3**	**0.5**	**0**	**0**	....
Cull fruits—																							
1912	23–12	66	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	62– 7	196	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	8– 1	44	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	10– 6	29	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**26.2**	**84**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	158–11	377	0– 9	3	0–11	3	7–12	23	19–12	55	30– 9	75	36–14	80	24– 8	48	9–12	17	3–11	6	0–13	1	0
1913	127–10	348	0– 0	0	0– 8	2	3–15	13	11– 9	33	13– 5	33	11– 6	25	8– 6	17	9–10	18	5–14	10	0–10	1	0
1914	231– 1	673	16– 0	75	37–13	131	52– 7	154	38 –2	99	38– 6	89	28– 3	58	9–11	18	2– 6	4	0– 0	0	0– 0	0	4
1915	163–15	347	1– 1	4	1– 8	5	11– 9	32	18– 8	46	33– 8	74	42– 4	83	18– 4	33	15– 9	25	8–14	13	2– 8	3	7
Average	**170.3**	**436**	**4.4**	**21**	**10.1**	**35**	**18.9**	**56**	**22.0**	**58**	**28.9**	**68**	**29.7**	**62**	**15.2**	**29**	**9.3**	**16**	**4.6**	**7**	**1.0**	**2**	**3**

339. Wrinkled Australian strain:																						
Orchard grade—																						
1912	73- 7	206	13- 5	50	17- 8	53	11- 6	31	17- 6	43	9- 8	21	3- 2	6	0-10	1	0-10	1	0- 0	0	0- 0	0	....
1913	40-11	132	5-14	28	7-13	28	14-10	45	6- 0	16	5-14	14	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	27- 8	64	0- 0	0	1- 2	4	3- 1	9	7- 6	19	7-11	17	5- 4	10	2- 6	4	0- 0	0	0-10	1	0- 0	0	....
1915	48-12	97	0- 0	0	0- 0	0	2- 7	7	4- 6	11	10- 3	23	10-14	22	9-11	17	7- 1	11	1-14	3	2- 4	3	....
Average	**47.6**	**125**	**4.8**	**20**	**6.6**	**21**	**7.9**	**24**	**8.8**	**22**	**8.3**	**19**	**4.9**	**10**	**3.2**	**6**	**1.9**	**3**	**0.6**	**1**	**0.6**	**0.8**	....
Standard grade—																						
1912	116-11	312	24-12	102	14-10	44	19-14	57	26-11	68	9- 8	21	18-14	16	0- 0	0	2- 6	4	0- 0	0	0- 0	0	....
1913	110-11	375	28-11	137	28- 5	96	23- 8	68	14-11	38	11-12	28	3-12	8	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	125- 6	315	6- 4	34	7-15	25	23-12	66	21- 2	53	31- 3	70	19-12	40	12-12	23	1-14	3	0- 0	0	0-12	1	....
1915	19- 1	41	0-11	4	0- 9	2	0-11	2	0- 6	1	1- 2	3	4-10	10	5-14	11	3- 2	5	1- 4	2	0-12	1	....
Average	**93.0**	**261**	**15.1**	**69**	**12.9**	**42**	**17.0**	**48**	**15.7**	**40**	**13.4**	**31**	**11.8**	**19**	**4.7**	**9**	**1.8**	**3**	**0.3**	**0.5**	**0.4**	**0.5**	....
Cull fruits—																						
1912	20-12	84	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1913	45- 4	196	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1914	16- 6	46	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
1915	3-11	16	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
Average	**21.5**	**86**	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	....
Total crop—																						
1912	210-14	602	38- 1	152	32- 2	97	31- 4	88	44- 1	111	19- 0	42	22- 0	22	0-10	1	3- 0	5	0- 0	0	0- 0	0	304
1913	196-10	703	34- 9	165	36- 2	124	38- 2	113	20-11	54	17-10	42	4- 4	9	0- 0	0	0- 0	0	0- 0	0	0- 0	0	385
1914	169- 4	425	6- 4	34	9- 1	29	26-13	75	28- 8	72	38-14	87	25- 0	50	15- 2	27	1-14	3	0-10	1	0-12	1	307
1915	71- 8	154	0-11	4	0- 9	2	3- 2	9	4-12	12	11- 5	26	15- 8	32	15- 9	28	10- 3	16	3- 2	5	3- 0	4	37
Average	**162.1**	**471**	**19.9**	**89**	**19.5**	**63**	**24.8**	**71**	**24.5**	**62**	**21.7**	**49**	**16.7**	**28**	**7.8**	**14**	**3.8**	**6**	**0.9**	**2**	**0.9**	**1**	**258**
342. Thomson strain:																						
Orchard grade—																						
1912	94- 3	387	56-11	253	25- 4	97	8- 5	26	2-12	8	1- 3	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	85- 2	244	6- 2	26	10- 4	36	26- 3	78	21- 9	57	16- 2	37	4- 5	9	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1914	156-15	472	14- 9	62	31-10	112	50- 6	150	32-10	86	20-13	48	6- 6	13	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1915	165-14	644	44-10	212	57- 5	225	49- 1	164	11- 0	33	3-14	10	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
Average	**125.5**	**437**	**30.5**	**138**	**31.1**	**118**	**33.5**	**105**	**17.0**	**46**	**10.5**	**25**	**2.7**	**6**	**0.3**	**0.5**	**0**	**0**	**0**	**0**	**0**	**0**	....
Standard grade—																						
1912	28-13	156	26- 7	148	1- 2	4	1- 4	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	23-13	81	5-15	29	5- 6	19	4-10	13	3- 4	9	4- 2	10	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	11- 6	47	5-12	31	1- 6	5	1- 6	4	0- 6	1	2- 0	5	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	62- 1	310	42- 8	238	11- 4	44	6-15	24	1- 0	3	0- 6	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
Average	**31.5**	**148**	**20.2**	**112**	**4.8**	**18**	**3.5**	**11**	**1.2**	**3**	**1.6**	**4**	**0.3**	**0.5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
342. Thomson strain—Con.																							
Cull fruits—																							
1912	3-12	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7- 6	25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	3- 9	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	2-11	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**4.3**	**19**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	126-12	565	83- 2	401	26- 6	101	9- 9	30	2-12	8	1- 3	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	11
1913	116- 5	350	12- 1	55	15-10	55	30-13	91	24-13	66	20- 4	47	4-13	10	0- 9	1	0- 0	0	0- 0	0	0- 0	0	0
1914	171-14	535	20- 5	93	33- 0	117	51-12	154	33- 0	87	22-13	53	6-14	14	0- 9	1	0- 0	0	0- 0	0	0- 0	0	3
1915	230-10	967	87- 2	450	68- 9	269	56- 0	188	12- 0	36	4- 4	11	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	15
Average	**161.4**	**604**	**50.7**	**250**	**35.9**	**136**	**37.0**	**116**	**18.1**	**49**	**12.1**	**29**	**2.9**	**6**	**0.3**	**0.5**	**0**	**0**	**0**	**0**	**0**	**0**	**7**
344. Washington strain:																							
Orchard grade—																							
1912	137-14	318	4- 5	16	12-10	38	16- 4	44	41- 4	98	23- 9	50	26- 1	49	4- 8	8	8- 0	13	1- 5	2	0- 0	0	....
1913	25- 5	49	0- 0	0	0- 0	0	2- 8	7	1-12	5	2- 9	6	3-10	7	11- 6	19	1- 5	2	1- 7	2	0-12	1	....
1914	81- 6	148	0- 0	0	0- 0	0	2- 1	6	6- 6	15	17- 2	35	30-14	55	19- 9	30	3-12	5	0-12	1	0-14	1	....
1915	197-14	329	0- 0	0	0- 0	0	0- 5	1	3- 8	9	11- 2	24	35- 9	69	68- 8	117	33- 2	50	22-11	32	23- 1	27	....
Average	**110.6**	**211**	**1.1**	**4**	**3.2**	**10**	**5.3**	**15**	**13.2**	**32**	**13.6**	**29**	**24.0**	**45**	**26.0**	**44**	**11.5**	**18**	**6.5**	**9**	**6.2**	**7**	....
Standard grade—																							
1912	26-14	69	3- 6	15	2-10	8	3- 6	9	7- 6	17	6-11	14	2- 2	4	0- 0	0	1- 5	2	0- 0	0	0- 0	0	....
1913	14-14	33	0- 4	1	1- 3	4	2- 0	6	0-14	2	3-11	8	3-10	7	1- 2	2	0-10	1	0-12	1	0-12	1	....
1914	24-11	52	1- 6	6	0-15	3	2- 5	6	3- 0	7	3-12	8	6-12	12	4- 4	7	0-11	1	0-12	1	0-14	1	....
1915	59- 3	121	0- 0	0	1- 3	4	5- 7	15	2- 5	6	10- 2	23	21- 9	43	9-12	17	5- 2	8	1- 7	2	2- 4	3	....
Average	**31.4**	**69**	**1.3**	**6**	**1.5**	**5**	**3.3**	**9**	**3.4**	**8**	**6.1**	**13**	**8.5**	**17**	**3.8**	**7**	**1.9**	**3**	**0.7**	**1**	**1.0**	**1**	....

Cull fruits—																							
1912	11- 9	49	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	34- 1	119	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	3- 8	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	23- 3	60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**18.1**	**57**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	176- 5	427	7-11	31	15- 4	46	19-10	53	48-10	115	30- 4	64	28- 3	53	4- 8	8	9- 5	15	1- 5	2	0- 0	0	0
1913	74- 4	201	0- 4	1	1- 3	4	4- 8	13	2-10	7	6- 4	14	7- 4	14	12- 8	21	1-15	3	2- 3	3	1- 8	2	0
1914	109- 9	207	1- 6	6	0-15	3	4- 6	12	9- 6	22	20-14	43	37-10	67	23-13	37	4- 7	6	1- 8	2	1-12	2	10
1915	280- 4	510	0- 0	0	1- 3	4	5-12	16	5-13	15	21- 4	47	57- 2	112	78- 4	134	38- 4	58	24- 2	34	25- 5	30	0
Average	**160.1**	**336**	**2.3**	**9**	**4.6**	**14**	**8.6**	**23**	**16.6**	**40**	**19.7**	**42**	**32.5**	**62**	**29.8**	**50**	**13.5**	**21**	**7.3**	**10**	**7.1**	**9**	**3**
347. Yellow Washington strain:																							
Orchard grade—																							
1912	121- 6	314	0- 7	7	5- 4	20	23- 7	73	24- 0	65	32- 8	79	19- 1	40	10- 9	20	4-12	8	1- 6	2	0- 0	0	....
1913	80- 3	162	0- 0	0	0-10	2	2- 4	7	5- 1	14	11- 9	28	12-13	28	10-14	22	16- 8	30	13-14	22	6-10	9	....
1914	209- 5	490	3- 2	14	6-14	24	29-12	88	34- 1	89	49- 9	113	47- 1	96	20- 4	37	10- 5	17	7- 9	11	0-12	1	....
1915	83- 9	158	0- 0	0	0- 4	1	3- 4	9	8- 0	20	11-15	26	16- 5	32	17- 6	31	13-15	22	7- 1	10	5- 7	7	....
Average	**123.6**	**281**	**0.9**	**5**	**3.3**	**12**	**14.7**	**44**	**17.8**	**47**	**26.4**	**62**	**23.8**	**49**	**14.8**	**28**	**11.4**	**19**	**7.5**	**11**	**3.2**	**4**	....
Standard grade—																							
1912	19- 9	59	1- 4	8	1- 3	4	4- 4	14	4- 8	13	6- 6	16	2- 0	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	11- 6	27	0- 4	2	0- 4	1	1- 1	3	1- 2	3	2- 9	6	4-14	10	0-10	1	0-10	1	0- 0	0	0- 0	0	....
1914	17-14	47	1-11	9	1- 0	3	3-13	11	2-12	7	3-10	8	3-11	7	0-10	1	0-11	1	0- 0	0	0- 0	0	....
1915	25- 3	50	0- 3	1	0- 0	0	1- 6	4	4- 1	10	4-12	10	9-15	18	1-15	3	0-10	1	2—5	3	0- 0	0	....
Average	**18.5**	**46**	**0.8**	**5**	**0.6**	**2**	**2.6**	**8**	**3.1**	**8**	**4.3**	**10**	**5.1**	**10**	**0.8**	**1**	**0.5**	**0.8**	**0.6**	**0.8**	**0**	**0**	....
Cull fruits—																							
1912	10- 2	92	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	50- 8	145	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	6- 1	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	3- 6	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**17.5**	**67**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	151- 1	465	1-11	15	6- 7	24	27-11	87	28- 8	78	38-14	95	21- 1	44	10- 9	20	4-12	8	1- 6	2	0- 0	0	0
1913	142- 1	334	0- 4	2	0-14	3	3- 5	10	6- 3	17	14- 2	34	17-11	38	11- 8	23	17- 2	31	13-14	22	6-10	9	0
1914	233- 4	559	4-13	23	7-14	27	33- 9	99	36-13	96	53- 3	121	50-12	103	20-14	38	11- 0	18	7- 9	11	0-12	1	4
1915	112- 2	217	0- 3	1	0- 4	1	4-10	13	12- 1	30	16-11	36	26- 4	50	19- 5	34	14- 9	23	9- 6	13	5- 7	7	3
Average	**159.6**	**394**	**1.7**	**10**	**3.9**	**14**	**17.3**	**52**	**20.9**	**55**	**30.7**	**72**	**28.9**	**59**	**15.6**	**29**	**11.9**	**20**	**8.0**	**12**	**3.2**	**4**	**1.8**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
371. Thomson strain:																							
Orchard grade—																							
1912	117- 5	352	16- 4	71	20-10	69	21- 1	64	28- 0	76	18- 3	44	11- 9	25	1-10	3	0- 0	0	0- 0	0	0- 0	0	....
1913	85- 5	214	0- 8	2	5-14	20	17- 3	51	21-12	56	23- 7	53	11- 6	23	3-14	7	0-10	1	0-11	1	0- 0	0	....
1914	132 15	331	2- 2	9	6- 3	26	23-12	68	37 13	95	43 11	96	14-13	29	3 14	7	0- 0	0	0 11	1	0- 0	0	....
1915	179-11	509	4- 8	20	19- 2	71	50- 4	157	44- 4	122	34 12	84	17- 5	37	7-12	15	1-12	3	0- 0	0	0- 0	0	....
Average	**128.8**	**352**	**5.8**	**26**	**13.0**	**47**	**28.1**	**85**	**33.0**	**87**	**30.0**	**69**	**13.8**	**29**	**4.3**	**8**	**0.6**	**1**	**0.3**	**0.5**	**0**	**0**	....
Standard grade—																							
1912	7-12	24	0-15	4	3- 0	10	2- 1	6	0-13	2	0- 7	1	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	17- 3	48	0-15	4	4- 4	14	4- 3	12	2-10	7	2- 3	5	3- 0	6	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	14- 1	50	4-14	24	3- 2	10	3- 2	9	1-10	4	1- 5	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	21- 4	75	4-10	25	4-12	17	4- 1	13	3- 4	9	3-11	9	0-14	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
Average	**15.1**	**49**	**2.8**	**14**	**3.8**	**13**	**3.4**	**10**	**2.1**	**6**	**1.9**	**5**	**1.1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	....
Cull fruits—																							
1912	4- 6	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	8- 6	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	7- 3	26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	6 2	25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**6.5**	**24**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	129- 7	391	17- 3	75	23-10	79	23- 2	70	28-13	78	18 10	45	12- 1	26	1-10	3	0- 0	0	0- 0	0	0- 0	0	0
1913	110-14	290	1- 7	6	10- 2	34	21- 6	63	24- 6	63	25 10	58	14- 6	29	3-14	7	0-10	1	0-11	1	0- 0	0	0
1914	154- 3	407	7- 0	33	9- 5	36	26-14	77	39- 7	99	45- 0	99	14 13	29	3 14	7	0- 0	0	0-11	1	0- 0	0	0
1915	207- 1	609	9- 2	45	23-14	88	51- 5	170	47- 8	131	38- 7	93	18- 3	39	7-12	15	1-12	3	0- 0	0	0- 0	0	15
Average	**150.4**	**424**	**8.7**	**40**	**16.7**	**59**	**31.4**	**95**	**35.0**	**93**	**31.9**	**74**	**14.9**	**31**	**4.3**	**8**	**0.6**	**1**	**0.3**	**0.5**	**0**	**0**	**4**

372. Washington strain:																							
Orchard grade—																							
1912	122-4	286	5-9	21	9-6	29	14-5	40	29-2	72	18-4	40	26-0	51	3-12	7	13-14	23	2-0	3	0-0	0	....
1913	92-2	259	7-12	36	14-0	50	21-14	64	14-14	38	22-11	51	5-2	10	5-1	9	0-0	0	0-0	0	0-12	1	....
1914	136-11	309	1-14	7	6-4	20	22-12	62	28-10	69	42-1	89	23-6	44	8-3	13	2-0	3	0-12	1	0-13	1	....
1915	109-4	203	0-3	1	0-4	1	3-2	9	7-13	20	17-0	38	21-11	42	29-5	51	11-4	17	8-10	12	10-0	12	....
Average	**115.1**	**264**	**3.9**	**16**	**7.5**	**25**	**15.5**	**44**	**20.1**	**50**	**25.0**	**54**	**19.0**	**37**	**11.6**	**20**	**6.8**	**11**	**2.9**	**4**	**2.9**	**3**	....
Standard grade—																							
1912	8-9	25	1-9	8	0-14	3	1-0	3	2-1	5	0-15	2	1-8	3	0-0	0	0-10	1	0-0	0	0-0	0	....
1913	10-3	34	2-14	13	3-5	11	2-2	6	0-12	2	0-0	0	0-8	1	0-10	1	0-0	0	0-0	0	0-0	0	....
1914	20-7	52	1-6	6	3-5	10	6-7	17	2-10	6	2-4	5	3-4	6	1-3	2	0-0	0	0-0	0	0-0	0	....
1915	15-15	35	0-6	2	0-10	2	1-1	3	1-10	4	2-0	5	4-4	9	2-13	5	1-2	2	1-5	2	0-12	1	....
Average	**13.8**	**37**	**1.5**	**7**	**2.0**	**6**	**2.7**	**7**	**1.8**	**4**	**1.3**	**3**	**2.4**	**5**	**1.2**	**2**	**0.4**	**0.8**	**0.3**	**0.5**	**0.2**	**0.3**	....
Cull fruits—																							
1912	34-2	91	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	23-5	80	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	11-6	37	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	15-13	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**21.2**	**62**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	164-15	402	7-2	29	10-4	32	15-5	43	31-3	77	19-3	42	27-8	54	3-12	7	14-8	24	2-0	3	0-0	0	0
1913	125-10	373	10-10	49	17-5	61	24-0	70	15-10	40	22-11	51	5-10	11	5-11	10	0-0	0	0-0	0	0-12	1	0
1914	168-8	398	3-4	13	9-9	30	29-3	79	31-4	75	44-5	94	26-10	50	9-6	15	2-0	3	0-12	1	0-13	1	5
1915	141-0	278	0-9	3	0-14	3	4-3	12	9-7	24	19-0	43	25-15	51	32-2	56	12-6	19	9-15	14	10-12	13	3
Average	**150.0**	**362**	**5.4**	**24**	**9.5**	**32**	**18.2**	**51**	**21.9**	**54**	**26.3**	**58**	**21.4**	**42**	**12.7**	**22**	**7.2**	**12**	**3.2**	**5**	**3.1**	**4**	**2**
391. Golden Nugget strain:																							
Orchard grade—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	116-6	319	4-12	21	21-8	72	33-4	94	28-6	71	21-3	47	6-3	12	1-2	2	0-0	0	0-0	0	0-0	0	....
1915	54-1	128	0-7	2	3-3	11	7-12	23	7-5	19	12-12	30	10-0	21	8-13	16	1-12	3	2-1	3	0-0	0	....
Average	**85.2**	**224**	**2.6**	**12**	**12.3**	**42**	**20.5**	**59**	**17.8**	**45**	**17.0**	**39**	**8.1**	**17**	**5.0**	**9**	**0.9**	**2**	**1.0**	**2**	**0**	**0**	....
Standard grade—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	16-12	52	3-4	16	1-12	6	6-14	19	1-10	4	1-12	4	1-8	3	0-0	0	0-0	0	0-0	0	0-0	0	....
1915	37-14	112	3-8	16	9-13	34	8-11	26	3-0	8	5-7	13	5-12	12	1-11	3	0-0	0	0-0	0	0-0	0	....
Average	**27.3**	**82**	**3.4**	**16**	**5.8**	**20**	**7.8**	**23**	**2.3**	**6**	**3.6**	**9**	**3.6**	**8**	**0.8**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
391. Golden Nugget strain—Continued.																							
Cull fruits—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	8- 5	46	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	47-15	197	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**28.1**	**122**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	141- 7	417	8- 0	37	23- 4	78	40- 2	113	30- 0	75	22-15	51	7-11	15	1- 2	2	0- 0	0	0- 0	0	0- 0	0	2
1915	139-14	437	3-15	18	13- 0	45	16- 7	49	10- 5	27	18- 3	43	15-12	33	10- 8	19	1-12	3	2- 1	3	0- 0	0	7
Average	**140.7**	**427**	**6.0**	**28**	**18.1**	**62**	**28.3**	**81**	**20.2**	**51**	**20.6**	**47**	**11.7**	**24**	**5.8**	**11**	**0.9**	**2**	**1.0**	**2**	**0**	**0**	**5**
392. Sporting Washington strain:																							
Orchard grade—																							
1912	47- 0	111	0-13	3	3- 4	11	3- 9	10	11- 4	30	7-14	18	12- 0	25	2- 2	4	4- 2	7	2- 0	3	0- 0	0	....
1913	37- 6	90	0-11	3	2-11	9	6-15	20	6- 3	16	6-10	15	8-13	18	3- 7	6	1- 5	2	0-11	1	0- 0	0	....
1914	67- 2	131	0- 0	0	0- 4	1	1- 1	3	5- 8	14	17-15	39	22-11	43	12- 9	21	1-14	3	4- 8	6	0-12	1	....
1915	54- 5	95	0- 0	0	0- 5	1	0- 6	1	0-13	2	4- 5	10	7- 6	15	13-12	25	10- 4	17	11-12	17	5- 6	7	....
Average	**51.5**	**107**	**0.4**	**2**	**1.6**	**6**	**3.0**	**9**	**5.9**	**16**	**9.2**	**21**	**12.7**	**25**	**8.0**	**14**	**4.4**	**7**	**4.7**	**7**	**1.5**	**2**	....
Standard grade—																							
1912	82- 5	236	10-12	47	11-10	38	18-10	54	20- 4	51	13- 8	31	5-14	12	0- 0	0	1-11	3	0- 0	0	0- 0	0	....
1913	74- 7	220	10-13	48	11- 6	40	12-10	38	13- 8	36	16- 1	38	6-10	14	2-13	5	0-10	1	0- 0	0	0- 0	0	....
1914	87- 5	209	3- 2	13	4- 6	15	18- 9	52	10- 7	26	19- 4	43	20- 4	41	9- 4	16	0-10	1	0-11	1	0-12	1	....
1915	45- 5	94	0- 6	2	0- 5	1	0-11	2	3- 5	9	7- 6	18	13- 8	29	8- 4	15	5- 6	9	4- 8	7	1-10	2	....
Average	**72.3**	**190**	**6.3**	**28**	**6.9**	**24**	**12.6**	**37**	**11.9**	**31**	**14.0**	**33**	**11.6**	**24**	**5.1**	**9**	**2.1**	**4**	**1.3**	**2**	**0.6**	**0.8**	....

Cull fruits—																							
1912	11- 4	51	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	34- 0	115	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	2-14	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	16-12	43	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**16.2**	**54**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	140- 9	398	11- 9	50	14-14	49	22- 3	64	31- 8	81	21- 6	49	17-14	37	2- 2	4	5-13	10	2- 0	3	0- 0	0	192
1913	145-13	425	11- 8	51	14- 1	49	19- 9	58	19-11	52	22-11	53	15- 7	32	6- 4	11	1-15	3	0-11	1	0- 0	0	229
1914	157- 5	348	3- 2	13	4-10	16	19-10	55	15-15	40	37- 3	82	42-15	84	21-13	37	2- 8	4	5- 5	7	1- 8	2	142
1915	116- 6	232	0- 6	2	0-10	2	1- 1	3	4- 2	11	11-11	28	20-14	44	22- 0	40	15-10	26	16- 4	24	7- 0	9	131
Average	**140.0**	**351**	**6.6**	**29**	**8.5**	**29**	**15.6**	**45**	**17.8**	**46**	**23.2**	**53**	**24.3**	**49**	**13.0**	**23**	**6.5**	**11**	**6.0**	**9**	**2.1**	**3**	**174**
393. Washington strain:																							
Orchard grade—																							
1912	111- 5	238	1- 2	4	4- 3	13	5- 4	15	18- 7	47	20- 7	46	28-10	57	5-14	11	19- 0	33	3-14	6	4- 8	6	....
1913	87-14	228	4-10	20	6-10	24	18- 8	55	16-15	44	22- 4	50	10- 4	20	6-11	12	1- 4	2	0- 0	0	0-12	1	....
1914	122-15	241	0- 0	0	0- 5	1	5-14	16	12- 2	29	42-10	89	35-13	65	21- 5	34	4-14	7	0- 0	0	0- 0	0	....
1915	135-13	284	0- 3	1	0-14	3	5-10	17	11- 7	30	30- 0	70	38- 9	79	29-12	54	10- 6	17	8- 4	12	0-12	1	....
Average	**114.5**	**248**	**1.5**	**6**	**3.0**	**10**	**8.8**	**26**	**14.7**	**38**	**28.8**	**64**	**28.3**	**55**	**15.9**	**28**	**8.9**	**15**	**3.0**	**5**	**1.5**	**2**	....
Standard grade—																							
1912	13- 0	32	2- 2	9	1- 0	3	0- 0	0	1-10	4	1-12	4	2-15	6	1-10	3	1- 4	2	0-11	1	0- 0	0	....
1913	8-10	28	2-12	12	1-14	6	1- 1	3	0-13	2	1-10	4	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	33-14	71	0-15	4	2- 0	6	3- 3	8	5-10	13	6-10	14	6- 0	11	7- 6	12	0-10	1	1- 8	2	0- 0	0	....
1915	16-13	39	0- 4	2	0-10	2	1- 6	4	1- 2	3	3-12	9	6-10	14	0- 8	1	1- 4	2	1- 5	2	0- 0	0	....
Average	**18.1**	**42**	**1.5**	**7**	**1.4**	**4**	**1.4**	**4**	**2.3**	**6**	**3.4**	**8**	**4.0**	**8**	**2.4**	**4**	**0.8**	**1**	**0.9**	**1**	**0**	**0**	....
Cull fruits—																							
1912	2-10	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	18- 0	55	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	1- 8	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	6-11	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**7.2**	**22**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	126-15	278	3- 4	13	5- 3	16	5- 4	15	20- 1	51	22- 3	50	31- 9	63	7- 8	14	20- 4	35	4- 9	7	4- 8	6	16
1913	114- 8	311	7- 6	32	8- 8	30	19- 9	58	17-12	46	23-14	54	10-12	21	6-11	12	1- 4	2	0- 0	0	0-12	1	0
1914	158- 5	320	0-15	4	2- 5	7	9- 1	24	17-12	42	49- 4	103	41-13	76	28-11	46	5- 8	8	1- 8	2	0- 0	0	4
1915	159- 5	339	0- 7	3	1- 8	5	7- 0	21	12- 9	33	33-12	79	45- 3	93	30- 4	55	11-10	19	9- 9	14	0-12	1	4
Average	**139.8**	**312**	**3.0**	**13**	**4.4**	**15**	**10.2**	**30**	**17.0**	**43**	**32.3**	**72**	**32.3**	**63**	**18.3**	**32**	**9.7**	**16**	**3.9**	**6**	**1.5**	**2**	**6**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																								Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
400. Yellow Washington strain:																							
Orchard grade—																							
1912	128– 9	314	0– 3	1	5–12	21	15– 9	49	24–12	67	30– 9	73	28– 9	61	15– 0	29	3– 7	6	4– 1	6	0–11	1	....
1913	34–11	58	0– 0	0	0– 0	0	0–10	2	1– 2	3	1–10	4	2– 3	5	2– 2	4	5– 4	9	10– 5	16	11– 7	15	....
1914	113–13	253	1– 6	6	6– 2	21	10–12	32	14–10	38	24–11	56	25– 5	51	12– 6	22	8–12	14	5–10	8	4– 3	5	....
1915	139– 3	283	0–11	3	3–11	12	13– 2	37	12– 0	30	22–12	51	30– 9	61	20– 2	36	19– 2	30	9– 0	13	8– 2	10	....
Average	**104.1**	**227**	**0.6**	**3**	**3.9**	**14**	**10.0**	**30**	**13.1**	**35**	**19.9**	**46**	**21.7**	**45**	**12.4**	**23**	**9.1**	**15**	**7.3**	**11**	**6.1**	**8**	....
Standard grade—																							
1912	11– 4	37	1– 6	7	1– 4	5	3– 0	10	3– 0	9	1– 9	4	0– 8	1	0– 9	1	0– 0	0	0– 0	0	0– 0	0	....
1913	9–10	21	0– 0	0	0– 0	0	0– 4	1	2– 0	6	2– 1	5	1– 7	3	1– 0	2	1– 4	2	0– 0	0	1–10	2	....
1914	16– 0	41	1– 7	8	0–15	3	1–12	5	3– 3	8	3– 4	7	3–10	7	1– 3	2	0–10	1	0– 0	0	0– 0	0	....
1915	20– 6	44	0– 9	3	0– 4	1	1– 7	4	4– 7	11	4– 1	9	4– 4	8	2– 6	4	0–10	1	0–11	1	1–11	2	....
Average	**14.3**	**36**	**0.8**	**5**	**0.6**	**2**	**1.6**	**5**	**3.2**	**9**	**2.7**	**6**	**2.5**	**5**	**1.3**	**2**	**6**	**1**	**2**	**3**	**8**	**1**	....
Cull fruits—																							
1912	12– 2	49	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	39–10	104	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	3–13	17	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	11– 6	28	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**16.7**	**50**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																							
1912	151–15	400	1– 9	8	7– 0	26	18– 9	59	27–12	76	32– 2	77	29– 1	62	15– 9	30	3– 7	6	4– 1	6	0–11	1	0
1913	83–15	183	0– 0	0	0– 0	0	0–14	3	3– 2	9	3–11	9	3–10	8	3– 2	6	6– 8	11	10– 5	16	13– 1	17	0
1914	133–10	311	2–13	14	7– 1	21	12– 8	37	17–13	46	27–15	63	28–15	58	13– 9	24	9– 6	15	5–10	8	4– 3	5	0
1915	170–15	355	1– 4	6	3–15	13	14– 9	41	16– 7	41	26–13	60	34–13	69	22– 8	40	19–12	31	9–11	14	9–13	12	7
Average	**135.1**	**312**	**1.4**	**7**	**4.5**	**16**	**11.6**	**35**	**16.3**	**43**	**22.6**	**52**	**24.1**	**49**	**13.7**	**25**	**9.8**	**16**	**7.4**	**11**	**6.9**	**9**	**2**

404. Thomson strain:																							
Orchard grade—																							
1912	89- 5	336	42- 3	181	29-11	104	8- 4	25	8-12	25	0- 7	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	68- 4	200	3-10	14	10-14	38	25- 0	76	17- 7	47	6-15	16	4- 6	9	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	120-15	349	6- 2	28	21-14	75	35- 7	105	31-14	84	20- 5	47	3- 1	6	2- 4	4	0- 0	0	0- 0	0	0- 0	0	....
1915	152-12	484	7-13	36	31-12	120	52- 4	167	28-12	82	22-11	58	8- 0	18	1- 8	3	0- 0	0	0- 0	0	0- 0	0	....
Average	**107.8**	**342**	**14.9**	**65**	**23.5**	**84**	**30.2**	**93**	**21.7**	**60**	**12.6**	**31**	**3.9**	**8**	**0.9**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	....
Standard grade—																							
1912	29- 9	160	27- 6	153	1- 2	4	0-10	2	0- 7	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	16-11	63	8- 0	35	5- 0	17	2- 5	7	1- 6	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	15- 9	57	3- 8	22	4- 2	14	4- 8	13	2- 0	5	0- 7	1	1- 0	2	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1915	25-15	108	11- 4	57	10- 2	37	3- 2	10	1- 1	3	0- 6	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
Average	**21.9**	**97**	**12.5**	**67**	**5.1**	**18**	**2.6**	**8**	**1.2**	**3**	**0.2**	**0.5**	**0.3**	**0.5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	....
Cull fruits—																							
1912	4- 2	24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	6- 8	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	3- 4	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	2- 6	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**4.1**	**21**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	123- 0	520	69- 9	334	30-13	108	8-14	27	9- 3	26	0- 7	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	6
1913	91- 7	294	11-10	49	15-14	55	27- 5	83	18-13	51	6-15	16	4- 6	9	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0
1914	139-12	420	9-10	50	26- 0	89	39-15	118	33-14	89	20-12	48	4- 1	8	2- 4	4	0- 0	0	0- 0	0	0- 0	0	0
1915	181- 1	605	19- 1	93	41-14	157	55- 6	177	29-13	85	23- 1	59	8- 0	18	1- 8	3	0- 0	0	0- 0	0	0- 0	0	15
Average	**133.8**	**460**	**27.5**	**132**	**28.6**	**102**	**32.9**	**101**	**22.9**	**63**	**12.8**	**31**	**4.1**	**9**	**0.9**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
408. Washington strain:																							
Orchard grade—																							
1912	148- 4	450	28- 8	115	36-14	121	22- 9	66	37-12	98	13-12	32	7-11	16	1- 2	2	0- 0	0	0- 0	0	0- 0	0	....
1913	132- 1	379	13- 8	64	16- 6	59	31- 9	96	18- 9	50	24- 6	57	16- 2	33	7- 2	13	3- 2	5	1- 5	2	0- 0	0	....
1914	85- 3	196	0- 4	1	3-11	12	12-11	36	16- 5	41	28- 3	62	19-12	37	3-10	6	0- 0	0	0-11	1	0- 0	0	....
1915	26-10	57	0- 0	0	0- 4	1	1- 6	4	1-13	5	6-12	16	7-13	16	6-13	12	1- 2	2	0- 0	0	0-11	1	....
Average	**98.0**	**271**	**10.5**	**45**	**14.3**	**48**	**17.0**	**51**	**18.6**	**49**	**18.3**	**42**	**12.8**	**26**	**4.7**	**8**	**1.1**	**2**	**0.5**	**0.8**	**0.2**	**0.3**	....
Standard grade—																							
1912	22- 1	91	12- 7	63	3-12	12	0-11	3	3- 1	8	1-11	4	0- 7	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	24-14	80	6- 4	29	6- 9	23	5- 3	15	0-12	2	2- 3	4	1- 8	3	1- 2	2	1- 5	2	0- 0	0	0- 0	0	....
1914	15-10	49	4- 8	22	1- 9	5	3- 8	9	2- 2	5	1- 6	3	2- 0	4	0- 0	0	0- 9	1	0- 0	0	0- 0	0	....
1915	37-11	75	0- 2	1	0- 4	1	1- 0	3	1- 3	3	1-10	4	13- 4	29	6- 1	12	5- 5	9	4- 6	7	4- 8	6	....
Average	**25.1**	**74**	**5.8**	**29**	**3.0**	**10**	**2.6**	**8**	**1.8**	**5**	**1.7**	**4**	**4.3**	**9**	**1.8**	**4**	**1.8**	**3**	**1.1**	**2**	**1.1**	**2**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
408. Washington strain—Con																							
Cull fruits—																							
1912	5- 4	30																					
1913	14-10	55																					
1914	3- 4	18																					
1915	4-10	13																					
Average	**6.9**	**29**																					
Total crop—																							
1912	175- 9	571	40-15	178	40-10	133	23- 4	69	40-13	106	15- 7	36	8- 2	17	1- 2	2	0- 0	0	0- 0	0	0- 0	0	1
1913	171- 9	514	19-12	93	22-15	82	33-12	111	19- 5	52	26- 9	61	17-10	36	8- 4	15	4- 7	7	1- 5	2	0- 0	0	1
1914	104- 1	263	4-12	23	5- 4	17	16- 3	45	18- 7	46	29- 9	65	21-12	41	3-10	6	0- 9	1	0-11	1	0- 0	0	1
1915	68-15	145	0- 2	1	0- 8	2	2- 6	7	3- 0	8	8- 6	20	21- 1	45	12-14	24	6- 7	11	4- 6	7	5- 3	7	1
Average	**130.0**	**373**	**16.4**	**74**	**17.3**	**59**	**19.6**	**58**	**20.4**	**53**	**20.0**	**46**	**17.1**	**35**	**6.5**	**12**	**2.9**	**5**	**1.6**	**3**	**1.3**	**2**	**1**
412. Wrinkled Australian strain:																							
Orchard grade—																							
1912	89- 3	237	9-14	37	17- 2	51	15-10	42	20-13	52	15- 2	34	8-14	18	1- 2	2	0-10	1	0- 0	0	0- 0	0	
1913	41- 2	126	3-10	16	8-14	32	12- 2	37	9- 0	24	4- 2	10	2-14	6	0- 8	1	0- 0	0	0- 0	0	0- 0	0	
1914	9- 9	27	0-12	3	0-10	2	1-12	5	4- 5	12	2- 2	5	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	
1915	8- 6	18	0- 0	0	0- 0	0	0- 0	0	1- 2	3	1-10	4	3- 0	6	2- 1	4	0- 9	1	0- 0	0	0- 0	0	
Average	**37.1**	**102**	**3.6**	**14**	**6.7**	**21**	**7.4**	**21**	**8.8**	**23**	**5.8**	**13**	**3.7**	**8**	**0.9**	**2**	**0.3**	**0.5**	**0**	**0**	**0**	**0**	
Standard grade—																							
1912	58- 0	196	3- 7	55	8-10	27	11- 5	32	19- 4	49	9-13	22	5- 0	10	0- 9	1	0- 0	0	0- 0	0	0- 0	0	
1913	78- 0	310	33-12	165	17- 6	68	16-12	51	5-15	16	2-14	7	1- 5	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	
1914	115- 4	249	3- 0	16	5- 0	16	19- 2	53	11- 3	28	27- 4	61	21- 4	42	24-12	27	3- 0	5	0-11	1	0- 0	0	
1915	59-15	145	1- 4	6	1-12	6	6-10	20	9- 6	25	12- 8	31	19- 3	41	5- 8	10	1- 2	2	2-10	4	0- 0	0	
Average	**77.8**	**225**	**10.4**	**61**	**8.2**	**29**	**13.5**	**39**	**11.4**	**30**	**13.1**	**30**	**11.7**	**24**	**7.7**	**10**	**1.0**	**2**	**0.8**	**1**	**0**	**0**	

Cull fruits—																							
1912	11-5	46	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	23-2	96	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	5-15	29	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	4-2	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**11.1**	**46**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	158-8	479	13-5	92	25-12	78	26-15	74	40-1	101	24-15	56	13-14	28	1-11	3	0-10	1	0-0	0	0-0	0	134
1913	142-4	532	37-6	181	26-4	100	28-14	88	14-15	40	7-0	17	4-3	9	0-8	1	0-0	0	0-0	0	0-0	0	300
1914	130-12	305	3-12	19	5-10	18	20-14	58	15-8	40	29-6	66	21-4	42	24-12	27	3-0	5	0-11	1	0-0	0	259
1915	72-7	175	1-4	6	1-12	6	6-10	20	10-8	28	14-2	35	22-3	47	7-9	14	1-11	3	2-10	4	0-0	0	146
Average	**126.0**	**373**	**13.9**	**75**	**14.8**	**51**	**20.8**	**60**	**20.3**	**52**	**18.9**	**44**	**15.4**	**32**	**8.6**	**11**	**1.3**	**2**	**0.8**	**1**	**0**	**0**	**210**
418. Yellow Washington strain:																							
Orchard grade—																							
1912	85-14	230	0-9	3	5-2	19	21-4	67	17-11	49	20-1	49	13-1	28	5-13	11	1-11	3	0-10	1	0-0	0	....
1913	62-7	109	0-0	0	0-0	0	0-5	1	1-14	5	4-12	11	4-2	9	9-12	19	10-6	19	14-9	23	16-11	22	....
1914	126-15	301	1-12	8	6-5	22	16-12	49	21-13	57	27-11	65	26-0	54	16-5	30	6-12	11	2-13	4	0-12	1	....
1915	101-15	194	0-3	1	1-3	4	4-6	12	6-9	16	13-15	31	24-6	48	22-2	40	12-1	19	11-7	16	5-11	7	....
Average	**94.3**	**209**	**0.6**	**3**	**3.2**	**11**	**10.7**	**32**	**12.0**	**32**	**16.6**	**39**	**16.9**	**35**	**13.5**	**25**	**7.7**	**13**	**7.4**	**11**	**5.8**	**8**	....
Standard grade—																							
1912	13-15	46	1-7	8	1-13	8	3-4	11	3-7	10	2-6	6	1-0	2	0-10	1	0-0	0	0-0	0	0-0	0	....
1913	14-12	29	0-0	0	0-4	1	0-0	0	1-2	3	3-4	7	2-15	6	1-10	3	3-10	6	1-4	2	0-11	1	....
1914	16-1	49	2-12	18	0-4	1	1-11	5	5-0	13	1-7	3	3-2	6	1-3	2	0-10	1	0-0	0	0-0	0	....
1915	20-14	41	0-0	0	0-4	1	0-5	1	3-7	8	4-4	9	9-7	17	0-9	1	2-10	4	0-0	0	0-0	0	....
Average	**16.4**	**41**	**1.1**	**7**	**0.6**	**3**	**1.3**	**4**	**3.2**	**9**	**2.8**	**6**	**4.1**	**8**	**1.0**	**2**	**1.7**	**3**	**0.3**	**0.5**	**0.1**	**0.3**	....
Cull fruits—																							
1912	7-9	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	21-10	57	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	1-6	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	5-13	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**9.1**	**31**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	107-6	309	2-0	11	6-15	27	24-8	78	21-2	59	22-7	55	14-1	30	6-7	12	1-11	3	0-10	1	0-0	0	0
1913	98-13	195	0-0	0	0-4	1	0-5	1	3-0	8	8-0	18	7-1	15	11-6	22	14-0	25	15-13	25	17-6	23	0
1914	144-6	372	4-8	26	6-9	23	18-7	54	26-13	70	29-2	68	29-2	60	17-8	32	7-6	12	2-13	4	0-12	1	2
1915	128-10	249	0-3	1	1-7	5	4-11	13	10-0	24	18-3	40	33-13	65	22-11	41	14-11	23	11-7	16	5-11	7	8
Average	**119.8**	**281**	**1.7**	**10**	**3.8**	**14**	**12.0**	**36**	**15.2**	**40**	**19.5**	**45**	**21.0**	**43**	**14.5**	**27**	**9.4**	**16**	**7.7**	**11**	**5.9**	**8**	**3**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
419. Washington strain:																							
Orchard grade—																							
1912	88- 8	269	21- 9	88	21- 3	68	10-15	31	18- 6	47	10- 2	23	3-15	8	1- 2	2	1- 4	2	0- 0	0	0- 0	0	....
1913	88- 7	304	24-11	121	15-10	57	20- 6	63	8- 8	22	9-13	23	6- 7	13	1-11	3	0-10	1	0-11	1	0- 0	0	....
1914	66-10	149	1- 2	5	1-14	7	7- 8	22	9-10	24	20- 8	45	14- 6	27	10- 3	17	0-11	1	0-12	1	0- 0	0	....
1915	85- 2	177	0- 0	0	1- 4	4	4-14	14	7-15	20	20- 6	47	21- 8	43	18-10	33	5- 9	9	3- 8	5	1- 8	2	....
Average	**82.2**	**225**	**11.8**	**54**	**10.0**	**34**	**10.9**	**33**	**11.1**	**28**	**15.2**	**35**	**11.6**	**23**	**7.9**	**14**	**2.0**	**3**	**1.2**	**2**	**0.4**	**0.5**	....
Standard grade—																							
1912	38- 0	144	19- 5	93	6- 2	19	3-15	12	5- 4	13	0-14	2	1-15	4	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1913	39-12	175	21- 3	125	5- 8	19	3- 2	9	2- 6	6	5- 1	11	2- 8	5	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	16-15	50	2-14	14	4- 2	13	1-12	5	3- 3	8	2- 4	5	1- 0	2	1-12	3	0- 0	0	0- 0	0	0- 0	0	....
1915	30-11	75	0- 3	1	1- 3	5	4-12	15	3- 0	8	5- 5	13	10- 2	22	2- 8	5	1- 2	2	2- 8	4	0- 0	0	....
Average	**31.3**	**111**	**10.9**	**58**	**4.2**	**14**	**3.4**	**10**	**3.5**	**9**	**3.4**	**8**	**3.9**	**8**	**1.2**	**2**	**0.3**	**0.5**	**0.6**	**1**	**0**	**0**	....
Cull fruits—																							
1912	6- 7	51	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	14- 3	70	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	1- 0	8	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	3- 0	9	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**6.2**	**35**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																							
1912	132-15	464	40-14	181	27- 5	87	14-14	43	23-10	60	11- 0	25	5-14	12	1-11	3	1- 4	2	0- 0	0	0- 0	0	5
1913	142- 6	549	45-14	246	21- 2	76	23- 8	72	10-14	28	14-14	34	8-15	18	1-11	3	0-10	1	0-11	1	0- 0	0	0
1914	84- 9	207	4- 0	19	6- 0	20	9- 4	27	12-13	32	22-12	50	15- 6	29	11-15	20	0-11	1	0-12	1	0- 0	0	7
1915	118-13	261	0- 3	1	2- 7	9	9-10	29	10-15	28	25-11	60	31-10	65	21- 2	38	6-11	11	6-0	9	1- 8	2	3
Average	**119.7**	**370**	**22.7**	**112**	**14.2**	**48**	**14.3**	**43**	**14.6**	**37**	**18.6**	**42**	**15.5**	**31**	**9.1**	**16**	**2.3**	**4**	**1.9**	**3**	**0.4**	**0.5**	**4**

420. Unproductive strain:																							
Orchard grade—																							
1912	128– 8	337	9– 0	35	23–13	73	15– 2	42	36– 5	92	26– 8	60	15– 0	30	1– 9	3	1– 3	2	0– 0	0	0– 0	0	....
1913	59–13	165	3–14	16	5– 0	18	15– 8	46	17–11	46	12– 8	29	3– 7	7	1– 2	2	0–11	1	0– 0	0	0– 0	0	....
1914	83– 7	179	0– 4	1	1– 8	5	6–14	19	16– 4	40	29– 4	62	17–10	33	10– 6	17	0–10	1	0–11	1	0– 0	0	....
1915	85– 7	164	0– 0	0	0– 0	0	1–12	5	3–12	10	17– 4	39	18– 8	37	30– 6	53	8– 6	13	1– 4	2	4– 3	5	....
Average	**89.3**	**211**	**3.3**	**13**	**7.6**	**24**	**9.8**	**28**	**18.5**	**47**	**21.4**	**48**	**13.6**	**27**	**10.9**	**19**	**2.7**	**4**	**0.5**	**0.8**	**1.0**	**1**	....
Standard grade—																							
1912	24– 0	70	4–10	20	4– 2	13	3– 4	9	8– 0	20	1– 7	3	2– 0	4	0– 9	1	0– 0	0	0– 0	0	0– 0	0	....
1913	26– 6	94	10– 9	47	7– 1	24	4–12	14	1– 2	3	1– 4	3	1– 0	2	0– 0	0	0–10	1	0– 0	0	0– 0	0	....
1914	5– 5	20	1–14	11	0– 5	1	1–14	5	0–13	2	0– 7	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1915	26–10	64	1– 4	6	0– 5	1	2– 6	7	1– 8	4	6–10	16	11– 8	25	1–11	3	0– 0	0	1– 6	2	0– 0	0	....
Average	**20.6**	**62**	**4.6**	**21**	**3.0**	**10**	**3.1**	**9**	**2.9**	**7**	**2.4**	**6**	**3.6**	**8**	**0.6**	**1**	**0.2**	**0.3**	**0.3**	**0.5**	**0**	**0**	....
Cull fruits—																							
1912	4– 8	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	20– 4	80	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	4– 8	26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	9– 0	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**9.6**	**36**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	157– 0	423	13–10	55	27–15	86	18– 6	51	44– 5	112	27–15	63	17– 0	34	2– 2	4	1– 3	2	0– 0	0	0– 0	0	9
1913	106– 7	339	14– 7	63	12– 1	42	20– 4	60	18–13	49	13–12	32	4– 7	9	1– 2	2	1– 5	2	0– 0	0	0– 0	0	0
1914	93– 4	225	2– 2	12	1–13	6	8–12	24	17– 1	42	29–11	63	17–10	33	10– 6	17	0–10	1	0–11	1	0– 0	0	0
1915	121– 1	250	1– 4	6	0– 5	1	4– 2	12	5– 4	14	23–14	55	30– 0	62	32– 1	56	8– 6	13	2–10	4	4– 3	5	3
Average	**119.4**	**309**	**7.9**	**34**	**10.5**	**34**	**12.9**	**37**	**21.4**	**54**	**23.8**	**53**	**17.3**	**35**	**11.4**	**20**	**2.9**	**5**	**0.8**	**1**	**1.0**	**1**	**3**
433. Washington strain:																							
Orchard grade—																							
1912	98–10	227	1– 6	5	5– 8	17	9– 0	25	23– 0	57	26– 4	58	24– 2	49	1–12	3	7– 0	12	0–10	1	0– 0	0	....
1913	84– 7	208	2– 0	8	7–10	26	15– 7	45	15– 1	39	15–15	36	18– 0	36	8– 4	15	0–10	1	0–11	1	0–13	1	....
1914	92–14	224	1– 3	5	6– 2	20	16–14	49	18– 6	46	34– 0	74	10– 6	20	5– 5	9	0–10	1	0– 0	0	0– 0	0	....
1915	59– 7	112	0– 0	0	0– 0	0	1– 1	3	2– 6	6	8–14	20	13–12	28	16–14	30	9– 7	15	5– 9	8	1– 8	2	....
Average	**83.8**	**193**	**1.1**	**5**	**4.8**	**16**	**10.6**	**31**	**14.7**	**37**	**21.3**	**47**	**16.6**	**33**	**8.0**	**14**	**4.4**	**7**	**1.7**	**3**	**0.6**	**0.8**	....
Standard grade—																							
1912	32–10	82	4–10	18	3– 0	9	2–10	7	8–11	21	6– 2	13	4–11	9	1– 2	2	1–12	3	0– 0	0	0– 0	0	....
1913	32–10	94	5– 4	22	6–15	24	5– 8	16	3– 2	8	3– 6	8	5– 7	11	3– 0	5	0– 0	0	0– 0	0	0– 0	0	....
1914	11–15	35	1– 8	7	2– 8	8	3– 4	9	2–12	7	0– 7	1	1– 8	3	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1915	6–12	13	0– 0	0	0– 0	0	0– 5	1	0– 6	1	0–14	2	1– 8	3	1–12	3	1– 4	2	0–11	1	0– 0	0	....
Average	**21.0**	**56**	**2.8**	**12**	**3.1**	**10**	**2.9**	**8**	**3.7**	**9**	**2.7**	**6**	**3.3**	**7**	**1.5**	**3**	**0.8**	**1**	**0.2**	**0.3**	**0**	**0**	....

TABLE V.—*Detailed statement of the annual performance of 64 reipresentative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusve, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
433. Washington strain—Con.																							
Cull fruits—																							
1912	7- 6	24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	9- 5	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	1- 2	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	4- 6	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	5.5	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	138-10	333	6- 0	23	8- 8	26	11-10	32	31-11	78	32- 6	71	28-13	58	2-14	5	8-12	15	0-10	1	0- 0	0	0
1913	126- 6	330	7- 4	30	14- 9	50	20-15	61	18- 3	47	19- 5	44	23- 7	47	11- 4	20	0-10	1	0-11	1	0-13	1	0
1914	105-15	264	2-11	12	8-10	28	20- 2	58	21- 2	53	34- 7	75	11-14	23	5- 5	9	0-10	1	0- 0	0	0- 0	0	0
1915	70- 9	140	0- 0	0	0- 0	0	1- 6	4	2-12	7	9-12	22	15- 4	31	18-10	33	10-11	17	6- 4	9	1- 8	2	1
Average	**110.4**	**267**	**4.0**	**16**	**7.9**	**26**	**13.5**	**39**	**18.4**	**46**	**24.0**	**53**	**19.8**	**40**	**9.5**	**17**	**5.2**	**9**	**1.9**	**3**	**0.6**	**0.8**	**0.3**
436. Unproductive strain:																							
Orchard grade—																							
1912	114- 7	355	29- 7	119	29- 7	96	15-10	45	26- 1	66	6-14	16	6- 0	12	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1913	85-13	289	25-13	122	13-13	50	20- 0	57	9-13	25	10-15	25	3-11	7	1-12	3	0- 0	0	0- 0	0	0- 0	0	....
1914	53- 1	117	0- 8	2	3- 6	11	9- 0	25	8-10	21	12- 4	26	11- 6	20	6- 8	10	1- 7	2	0- 0	0	0- 0	0	....
191	42- 9	97	0- 0	0	0-14	3	3- 6	10	9-14	25	14- 8	33	7- 6	15	2-12	5	3- 3	5	0-10	1	0- 0	0	....
Average	**74.0**	**215**	**13.9**	**61**	**12.0**	**40**	**12.0**	**34**	**13.6**	**34**	**11.1**	**25**	**7.1**	**14**	**2.9**	**5**	**1.2**	**2**	**0.2**	**0.3**	**0**	**0**	....
Standard grade—																							
1912	37-15	166	25- 7	130	5-11	18	2-13	8	2- 5	6	1-11	4	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	31-12	129	16- 3	82	6-12	23	5- 0	15	1- 9	4	1-12	4	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	13-11	38	1-15	10	3- 0	9	2-10	7	0- 7	1	2- 7	5	2-10	5	0-10	1	0- 0	0	0- 0	0	0- 0	0	....
1915	13- 2	33	1- 0	4	1-14	6	2- 2	6	0-12	2	1-12	4	4- 0	8	1-10	3	0- 0	0	0- 0	0	0- 0	0	....
Average	**24.1**	**92**	**11.1**	**57**	**4.3**	**14**	**3.1**	**9**	**1.3**	**3**	**1.9**	**4**	**1.8**	**4**	**0.6**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	....

Cull fruits—																						
1912	10-14	64	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	20- 6	94	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	3- 4	17	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	1- 7	4	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**9.0**	**45**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																						
1912	163- 4	585	54-14	249	35- 9	114	18- 7	53	28- 6	72	8- 9	20	6- 0	12	0- 9	1	0- 0	0	0- 0	0	0- 0	0	2
1913	137-15	512	42- 0	204	20- 9	73	25- 0	72	11- 6	29	12-11	29	4- 3	8	1-12	3	0- 0	0	0- 0	0	0- 0	0	0
1914	70- 0	172	2- 7	12	6- 6	20	11-10	32	9- 1	22	14-11	31	14- 0	25	7- 2	11	1- 7	2	0- 0	0	0- 0	0	6
1915	57- 2	134	1- 0	4	2-12	9	5- 8	16	10-10	27	16- 4	37	11- 6	23	4- 6	8	3- 3	5	0-10	1	0- 0	0	0
Average	**107.1**	**351**	**25.1**	**117**	**16.3**	**54**	**15.1**	**43**	**14.9**	**38**	**13.0**	**29**	**8.9**	**17**	**3.5**	**6**	**1.2**	**2**	**0.2**	**0.3**	**0**	**0**	**2**
441. Yellow Washington strain: Orchard grade—																						
1912	71- 2	179	0- 0	0	2-14	11	11- 3	36	14- 9	40	14- 1	35	17- 8	37	7- 6	14	2- 4	4	0-10	1	0-11	1	....
1913	28- 9	56	0- 0	0	0- 0	0	0- 5	1	0-11	2	3-12	9	5-15	13	4- 8	9	7-14	14	3-14	6	1-10	2	....
1914	104- 8	241	0- 4	1	2- 2	7	11- 3	33	16- 7	43	25- 9	59	22- 2	45	14- 4	26	9- 1	15	1-15	10	1- 9	2	....
1915	119- 4	259	0- 6	2	2- 6	8	13- 2	37	18- 0	45	28- 7	63	26- 0	52	16-13	30	9- 5	15	4- 1	6	0-12	1	....
Average	**80.9**	**184**	**0.1**	**1**	**1.8**	**7**	**9.0**	**27**	**12.4**	**32**	**17.9**	**41**	**17.9**	**37**	**10.7**	**20**	**7.1**	**12**	**2.6**	**6**	**1.1**	**1**	....
Standard grade—																						
1912	13-12	38	0-15	5	0- 5	1	2- 9	8	2-12	8	2-12	7	3- 6	7	0- 8	1	0- 9	1	0- 0	0	0- 0	0	....
1913	7- 1	16	0- 0	0	0- 5	1	0- 5	1	0- 0	0	2- 8	6	3-15	8	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	15- 3	41	1-12	10	1- 8	5	1-12	5	3-10	9	2- 6	5	1-10	3	0- 9	1	1- 5	2	0-11	1	0- 0	0	....
1915	25- 7	62	0-12	4	0-13	3	3- 1	9	4- 5	11	11-13	26	3- 1	6	1- 1	2	0- 9	1	0- 0	0	0- 0	0	....
Average	**15.3**	**39**	**0.9**	**5**	**0.8**	**3**	**1.9**	**6**	**2.7**	**7**	**4.9**	**11**	**3.0**	**6**	**0.5**	**1**	**0.6**	**1**	**0.2**	**0.3**	**0**	**0**	....
Cull fruits—																						
1912	4- 5	60	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	18- 8	56	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	4-11	22	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	6- 7	17	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**8.5**	**39**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																						
1912	89- 3	277	0-15	5	3- 3	12	13-12	44	17- 5	48	16- 3	42	20-14	44	7-14	15	2-13	5	0-10	1	0-11	1	0
1913	54- 2	128	0- 0	0	0- 5	1	0-10	2	0-11	2	6- 4	15	9-14	21	4- 8	9	7-14	14	3-14	6	1-10	2	0
1914	124- 6	304	2- 0	11	3-10	12	12-15	38	20- 1	52	27-15	64	23-12	48	14-13	27	10- 6	17	2-10	11	1- 9	2	0
1915	151- 2	338	1- 2	6	3- 3	11	16- 3	46	22- 5	56	40- 4	89	29- 1	58	17-14	32	9-14	16	4- 1	6	0-12	1	10
Average	**104.7**	**262**	**1.0**	**6**	**2.6**	**9**	**10.9**	**32**	**15.1**	**39**	**22.8**	**52**	**20.9**	**43**	**11.3**	**21**	**7.7**	**13**	**2.8**	**6**	**1.1**	**2**	**3**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
444. Washington strain:																							
Orchard grade—																							
1912	112– 2	336	22–12	91	29– 9	94	15–10	44	29– 9	75	9– 2	21	4– 6	9	1– 2	2	0– 0	0	0– 0	0	0– 0	0	....
1913	84– 3	282	19– 2	94	17– 1	61	22– 8	67	11– 2	29	9– 7	22	3– 2	6	1– 3	2	0–10	1	0– 0	0	0– 0	0	....
1914	52– 8	120	1– 1	4	3–10	12	8–14	24	8– 2	20	16–10	35	10– 8	19	2– 5	4	1– 6	2	0– 0	0	0– 0	0	....
1915	32– 1	61	0– 0	0	0– 0	0	0–15	3	2– 3	6	6– 1	14	4–10	9	9– 4	16	3–12	6	2–14	4	2– 6	3	....
Average	**70.2**	**200**	**10.7**	**47**	**12.3**	**42**	**12.0**	**35**	**12.8**	**33**	**10.3**	**23**	**5.7**	**11**	**3.5**	**6**	**1.4**	**2**	**0.7**	**1**	**0.6**	**0.8**	....
Standard grade—																							
1912	26–13	109	15– 9	78	4– 1	13	1–11	5	3–12	9	1– 4	3	0– 8	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	30–13	125	13–10	75	5– 6	19	6–14	20	1– 2	3	2– 4	5	1– 9	3	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1914	9–11	28	1–14	9	1– 8	5	2– 6	6	0–12	2	2– 0	4	0– 9	1	0–10	1	0– 0	0	0– 0	0	0– 0	0	....
1915	25– 6	65	0–10	4	1–10	6	2– 8	8	2–10	7	6–14	17	6–12	15	3– 4	6	1– 2	2	0– 0	0	0– 0	0	....
Average	**23.2**	**82**	**7.9**	**42**	**3.1**	**11**	**3.4**	**10**	**2.1**	**5**	**3.1**	**7**	**2.3**	**5**	**1.0**	**2**	**0.3**	**0.5**	**0**	**0**	**0**	**0**	....
Cull fruits—																							
1912	7–15	49	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	18– 5	89	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	3– 0	11	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	2– 0	10	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**7.8**	**40**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																							
1912	146–14	494	38– 5	169	33–10	107	17– 5	49	33– 5	84	10– 6	24	4–14	10	1– 2	2	0– 0	0	0– 0	0	0– 0	0	10
1913	133– 5	496	32–12	169	22– 7	80	29– 6	87	12– 4	32	11–11	27	4–11	9	1– 3	2	0–10	1	0– 0	0	0– 0	0	0
1914	65– 3	159	2–15	13	5– 2	17	11– 4	30	8–14	22	18–10	39	11– 1	20	2–15	5	1– 6	2	0– 0	0	0– 0	0	3
1915	59– 7	136	0–10	4	1–10	6	3– 7	11	4–13	13	12–15	31	11– 6	24	12– 8	22	4–14	8	2–14	4	2– 6	3	0
Average	**101.2**	**321**	**18.7**	**89**	**15.7**	**53**	**15.3**	**44**	**14.8**	**38**	**13.4**	**30**	**8.0**	**16**	**4.4**	**8**	**1.7**	**3**	**0.7**	**1**	**0.6**	**0.8**	**3**

446. Unproductive strain:																							
Orchard grade—																							
1912	114-13	35	27-12	113	27- 8	88	14-13	42	26- 8	69	10-14	25	5-10	11	1- 3	2	0- 9	1	0- 0	0	0- 0	0	....
1913	78-11	277	22- 8	109	16- 2	58	21-12	66	9- 0	24	5- 8	13	2- 9	5	0- 9	1	0-11	1	0- 0	0	0- 0	0	....
1914	54-11	123	0-12	3	5- 4	17	6- 3	17	8- 4	20	15- 8	33	13-10	25	4- 5	7	0- 0	0	0- 0	0	0-13	1	....
1915	26-15	55	0- 0	0	0- 4	1	1-11	5	2- 7	6	8-10	19	3- 8	7	7-12	13	2- 0	3	0-11	1	0- 0	0	....
Average	**68.8**	**202**	**12.8**	**56**	**12.3**	**41**	**11.1**	**33**	**11.5**	**30**	**10.1**	**23**	**6.3**	**12**	**3.5**	**6**	**0.8**	**1**	**0.2**	**0.3**	**0.2**	**0.3**	....
Standard grade—																							
1912	37-13	162	26-4	129	6-14	21	1-14	5	1- 7	4	0-14	2	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	36- 9	177	24-0	137	5-10	20	3- 9	11	2- 2	6	1- 4	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	14-15	49	4-8	23	2- 0	6	3- 0	8	1-12	4	3- 2	7	0- 0	0	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1915	10- 6	26	0-2	1	0- 9	2	2- 5	7	0- 6	1	2- 0	5	2-13	6	1-10	3	0- 9	1	0- 0	0	0- 0	0	....
Average	**24.9**	**103**	**13.7**	**73**	**3.8**	**12**	**2.7**	**8**	**1.4**	**4**	**1.8**	**4**	**0.8**	**2**	**0.5**	**1**	**0.1**	**0.3**	**0**	**0**	**0**	**0**	....
Cull fruits—																							
1912	7-12	58	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	14-15	80	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	1-10	11	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	0-14	3	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**6.3**	**38**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																							
1912	160- 6	571	54- 0	242	34- 6	109	16-11	47	27-15	73	11-12	27	6- 2	12	1- 3	2	0- 9	1	0- 0	0	0- 0	0	10
1913	130- 3	534	46- 8	246	21-12	78	25- 5	77	11- 2	30	6-12	16	2- 9	5	0- 9	1	0-11	1	0- 0	0	0- 0	0	3
1914	71- 4	183	5- 4	26	7- 4	23	9- 3	25	10- 0	24	18-10	40	13-10	25	4-14	8	0- 0	0	0- 0	0	0-13	1	5
1915	38- 3	84	0- 2	1	0-13	3	4- 0	12	2-13	7	10-10	24	6- 5	13	9- 6	16	2- 9	4	0-11	1	0- 0	0	0
Average	**100.0**	**343**	**26.5**	**129**	**16.0**	**53**	**13.8**	**40**	**13.0**	**34**	**11.9**	**27**	**7.2**	**14**	**4.0**	**7**	**1.0**	**2**	**0.2**	**0.3**	**0.2**	**0.3**	**5**
456. Unproductive strain:																							
Orchard grade—																							
1912	112-14	333	19- 7	76	28-10	93	18- 2	52	27-14	72	9- 2	21	5-12	12	1- 1	2	2-14	5	0- 0	0	0- 0	0	....
1913	75- 7	246	15-15	80	11- 0	41	15- 2	46	11- 9	31	15- 2	35	4-15	10	1- 2	2	0-10	1	0- 0	0	0- 0	0	....
1914	53- 9	128	0-12	3	5-14	19	9-10	27	11- 2	27	13- 0	28	9-15	19	2-10	4	0-10	1	0- 0	0	0- 0	0	....
1915	25- 4	58	0- 0	0	0- 0	0	2- 4	7	4- 4	11	8-10	20	5-11	12	3- 4	6	0- 9	1	0-10	1	0- 0	0	....
Average	**66.8**	**191**	**9.0**	**40**	**11.4**	**38**	**11.3**	**33**	**13.7**	**35**	**11.5**	**26**	**6.6**	**13**	**2.0**	**4**	**1.2**	**2**	**0.2**	**0.3**	**0**	**0**	....
Standard grade—																							
1912	29-12	128	20- 1	99	3- 2	10	2-15	10	1- 8	4	2- 2	5	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1913	25-12	118	15- 3	86	4- 9	16	3- 3	9	1- 9	4	1- 4	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	14- 0	47	5- 8	24	3- 6	11	2- 9	7	0-13	2	0- 0	0	0- 8	1	1- 4	2	0- 0	0	0- 0	0	0- 0	0	....
1915	12- 9	32	0- 0	0	0-14	3	2-11	8	2-12	7	1-12	4	4- 8	10	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
Average	**20.5**	**81**	**10.2**	**52**	**3.0**	**10**	**2.8**	**9**	**1.7**	**4**	**1.3**	**3**	**1.3**	**3**	**0.3**	**0.5**	**0**	**0**	**0**	**0**	**0**	**0**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
456. Unproductive strain—Continued.																							
Cull fruits—																							
1912	3–14	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1913	9–13	48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1914	1– 6	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1915	1–10	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	4.2	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total crop—																							
1912	146– 8	483	39– 8	175	31–12	103	21– 1	62	29– 6	76	11– 4	26	5–12	12	1– 1	2	2–14	5	0– 0	0	0– 0	0	4
1913	111– 0	412	31– 2	166	15– 9	57	18– 5	55	13– 2	35	16– 6	38	4–15	10	1– 2	2	0–10	1	0– 0	0	0– 0	0	0
1914	68–15	185	6– 4	27	9– 4	30	12– 3	34	11–15	29	13– 0	28	10– 7	20	3–14	6	0–10	1	0– 0	0	0– 0	0	1
1915	39– 7	96	0– 0	0	0–14	3	4–15	15	7– 0	18	10– 6	24	10– 3	22	3– 4	6	0– 9	1	0–10	1	0– 0	0	0
Average	**91.5**	**294**	**19.2**	**92**	**14.3**	**48**	**14.1**	**42**	**15.4**	**40**	**12.8**	**29**	**7.8**	**16**	**2.3**	**4**	**1.2**	**2**	**0.2**	**0.3**	**0**	**0**	**1**
457. Yellow Washington strain: Orchard grade—																							
1912	36– 8	93	0– 3	1	1– 9	6	5– 0	16	10– 0	27	7– 2	17	7–15	17	4– 2	8	0– 9	1	0– 0	0	0– 0	0	....
1913	14– 7	28	0– 0	0	0– 0	0	0– 0	0	0–12	2	2–14	7	0–13	2	1– 9	3	3– 5	6	3–12	6	1– 6	2	....
1914	99– 6	230	0–15	4	4–12	16	12–12	37	18– 0	46	22–11	52	20– 3	41	12–13	23	4– 4	7	1– 7	2	1– 9	2	....
1915	86– 0	170	0– 3	1	1– 7	5	5– 3	15	8– 8	21	13– 0	28	17– 9	35	17– 0	30	15– 1	24	4–15	7	3– 2	4	....
Average	**59.1**	**130**	**0.3**	**2**	**1.9**	**7**	**5.7**	**17**	**9.3**	**24**	**11.4**	**26**	**11.6**	**24**	**8.9**	**16**	**5.8**	**10**	**2.5**	**4**	**1.5**	**2**	....
Standard grade—																							
1912	16–13	45	0– 7	3	0– 8	2	1– 3	4	5– 5	15	5– 5	13	2– 6	5	1–11	3	0– 0	0	0– 0	0	0– 0	0	....
1913	8–14	15	0– 0	0	0– 0	0	0– 0	0	0–12	2	1– 6	3	0– 8	1	2– 7	4	0–11	1	3– 2	4	0– 0	0	....
1914	11–13	29	0– 2	1	1– 4	4	2– 2	6	3– 4	8	2–13	6	1– 1	2	0– 9	1	0–10	1	0– 0	0	0– 0	0	....
1915	22–14	49	0– 2	1	0– 0	0	1–11	5	4– 0	10	7– 6	16	5–12	11	2– 7	4	0– 0	0	0–12	1	0–12	1	....
Average	**15.1**	**35**	**0.2**	**1**	**0.4**	**1**	**1.3**	**4**	**3.3**	**9**	**4.2**	**10**	**2.4**	**5**	**1.8**	**3**	**0.3**	**0.5**	**1.0**	**1**	**0.2**	**0.3**	....

Cull fruits—																							
1912	13- 0	38																					
1913	34- 8	80																					
1914	2- 9	9																					
1915	9-13	24																					
Average	**15.0**	**38**																					
Total crop—																							
1912	66- 5	176	0-10	4	2- 1	8	6- 3	20	15- 5	42	12- 7	30	10- 5	22	5-13	11	0- 9	1	0- 0	0	0- 0	0	0
1913	57-13	123	0- 0	0	0- 0	0	0- 0	0	1- 8	4	4- 4	10	1- 5	3	4- 0	7	4- 0	7	6-14	10	1- 6	2	0
1914	113-12	268	1- 1	5	6- 0	20	14-14	43	21- 4	54	25- 8	58	21- 4	43	13- 6	24	4-14	8	1- 7	2	1- 9	2	0
1915	118-11	243	0- 5	2	1- 7	5	6-14	20	12- 8	31	20- 6	44	23- 5	46	19- 7	34	15- 1	24	5-11	8	3-14	5	7
Average	**89.2**	**203**	**0.5**	**3**	**2.4**	**8**	**7.0**	**21**	**12.6**	**33**	**15.7**	**36**	**14.1**	**28**	**10.6**	**19**	**6.1**	**10**	**3.5**	**5**	**1.7**	**2**	**2**
465. Unproductive strain: Orchard grade—																							
1912	98- 2	188	0- 5	1	2- 7	7	2-14	8	10-14	26	13- 3	29	28- 0	54	4- 8	8	25-15	43	10- 0	12	0- 0	0	
1913	45-15	114	1- 3	5	3-14	13	8-12	25	9- 1	23	13- 6	30	6- 2	12	2-14	5	0- 0	0	0-11	1	0- 0	0	
1914	54- 2	103	0- 0	0	0- 0	0	0- 6	1	6- 6	15	16- 1	33	15-10	29	14- 4	23	1- 7	2	0- 0	0	0- 0	0	
1915	60- 3	103	0- 0	0	0- 0	0	0- 0	0	2- 1	5	6- 8	14	9- 2	18	21-12	37	10- 0	15	5-13	8	4-15	6	
Average	**64.6**	**127**	**0.4**	**2**	**1.6**	**5**	**3.0**	**9**	**7.1**	**17**	**12.3**	**27**	**14.7**	**28**	**10.8**	**18**	**9.3**	**15**	**4.1**	**5**	**1.2**	**2**	
Standard grade—																							
1912	12-12	29	0- 8	2	0- 6	1	0-12	2	4-10	11	3- 4	7	1- 8	3	0- 0	0	1-12	3	0- 0	0	0- 0	0	
1913	14- 8	47	4- 6	18	3- 4	11	3-10	10	0-12	2	2- 8	6	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	
1914	6- 7	16	0- 6	2	0- 5	1	1- 6	4	0- 0	0	1- 6	3	3- 0	6	0- 0	0	0- 0	0	0- 0	0	0- 0	0	
1915	6-13	13	0- 0	0	0- 0	0	0- 5	1	0- 0	0	1- 4	3	2- 0	4	0- 9	1	0-10	1	2- 1	3	0- 0	0	
Average	**10.1**	**26**	**1.3**	**6**	**1.0**	**3**	**1.5**	**4**	**1.3**	**3**	**2.1**	**5**	**1.6**	**3**	**0.1**	**0.3**	**0.6**	**1**	**0.5**	**0.8**	**0**	**0**	
Cull fruits—																							
1912	10- 6	31																					
1913	3- 0	12																					
1914	1-12	5																					
1915	7- 2	15																					
Average	**5.6**	**16**																					
Total crop—																							
1912	121- 4	248	0-13	3	2-13	8	3-10	10	15- 8	37	16- 7	36	29- 8	57	4- 8	8	27-11	46	10- 0	12	0- 0	0	0
1913	63- 7	173	5- 9	23	7- 2	24	12- 6	35	9-13	25	15-14	36	6- 2	12	2-14	5	0- 0	0	0-11	1	0- 0	0	0
1914	62- 5	124	0- 6	2	0- 5	1	1-12	5	6- 6	15	17- 7	36	18-10	35	14- 4	23	1- 7	2	0- 0	0	0- 0	0	3
1915	74- 2	131	0- 0	0	0- 0	0	0- 5	1	2- 1	5	7-12	17	11- 2	22	22- 5	38	10-10	16	7-14	11	4-15	6	1
Average	**80.3**	**169**	**1.7**	**7**	**2.6**	**8**	**4.5**	**13**	**8.4**	**21**	**14.4**	**31**	**16.3**	**32**	**11.0**	**19**	**9.9**	**16**	**4.6**	**6**	**1.2**	**2**	**1**

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
475. Unproductive strain:																							
Orchard grade—																							
1912	48– 2	146	8–14	34	17– 1	55	8– 4	23	8– 6	21	4– 2	10	1– 7	3	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	63– 1	178	7– 0	31	8– 2	28	17–11	51	8–14	23	12– 4	28	5–10	11	2–14	5	0–10	1	0– 0	0	0– 0	0	....
1914	43– 0	110	1– 6	5	4– 3	14	9–14	28	10– 3	26	10– 2	23	6– 2	12	1– 2	2	0– 0	0	0– 0	0	0– 0	0	....
1915	57– 6	134	0– 4	1	1– 8	5	4–14	14	15– 4	39	18–10	43	5–12	12	8– 8	16	0– 9	1	1– 6	2	0–11	1	....
Average	**52.9**	**142**	**4.4**	**18**	**7.7**	**26**	**10.2**	**29**	**10.7**	**27**	**11.3**	**26**	**4.7**	**10**	**3.1**	**6**	**0.3**	**0.5**	**0.3**	**0.5**	**0.2**	**0.3**	....
Standard grade—																							
1912	15– 1	58	9– 4	40	4– 1	13	0–15	3	0– 6	1	0– 7	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1913	14– 6	52	4– 7	23	4– 2	14	2– 8	7	2–13	7	0– 0	0	0– 8	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1914	10– 6	32	3– 1	13	1–14	6	2– 3	6	0–13	2	1– 7	3	1– 0	2	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1915	19–10	50	1– 8	6	1–12	6	1–10	5	2– 3	6	3– 8	9	5– 2	11	2– 2	4	0– 9	1	0– 9	1	0–11	1	....
Average	**14.9**	**48**	**4.6**	**21**	**3.0**	**10**	**1.8**	**5**	**1.5**	**4**	**1.3**	**3**	**1.7**	**4**	**0.5**	**1**	**0.1**	**0.3**	**0.1**	**0.3**	**0.2**	**0.3**	....
Cull fruits—																							
1912	3– 2	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	9– 8	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	6– 3	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	3– 8	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**5.6**	**23**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	66– 5	217	18– 2	74	21– 2	68	9– 3	26	8–12	22	4– 9	11	1– 7	3	0– 0	0	0– 0	0	0– 0	0	0– 0	0	5
1913	86–15	266	11– 7	54	12– 4	42	20– 3	58	11–11	30	12– 4	28	6– 2	12	2–14	5	0–10	1	0– 0	0	0– 0	0	0
1914	59– 9	173	4– 7	18	6– 1	20	12– 1	34	11– 0	28	11– 9	26	7– 2	14	1– 2	2	0– 0	0	0– 0	0	0– 0	0	4
1915	80– 8	196	1–12	7	3– 4	11	6– 8	19	17– 7	45	22– 2	52	10–14	23	10–10	20	1– 2	2	1–15	3	1– 6	2	0
Average	**73.3**	**213**	**8.9**	**38**	**10.7**	**35**	**12.0**	**34**	**12.2**	**31**	**12.6**	**29**	**6.4**	**13**	**3.7**	**7**	**0.4**	**0.8**	**0.5**	**0.8**	**0.3**	**0.5**	**2**

477. Unproductive strain:																						
Orchard grade—																						
1912	67-13	129	0-11	3	0-11	2	1- 2	3	8- 1	19	10-10	22	23- 5	43	2-14	5	14-12	24	4-15	7	0-12	1	....
1913	18-15	51	0-12	3	1- 3	4	8- 3	24	2-12	7	4- 7	10	1- 1	2	0- 9	1	0- 0	0	0- 0	0	0- 0	0	....
1914	17-12	34	0- 4	1	0- 5	1	0- 0	0	0-12	2	6-15	14	5- 2	9	4- 6	7	0- 0	0	0- 0	0	0- 0	0	....
1915	73- 4	131	0- 0	0	0- 4	1	0-11	2	2-12	7	13- 0	28	17- 1	32	21- 1	35	12- 2	18	3- 0	4	3- 5	4	....
Average	**44.4**	**86**	**0.4**	**2**	**0.6**	**2**	**2.5**	**7**	**3.6**	**9**	**8.8**	**19**	**11.6**	**22**	**7.2**	**12**	**6.7**	**11**	**2.0**	**3**	**1.0**	**1**	....
Standard grade—																						
1912	10-10	25	0- 8	2	0-11	2	1-13	5	1- 3	3	3- 4	7	2- 9	5	0- 0	0	0-10	1	0- 0	0	0- 0	0	....
1913	9-12	29	2- 5	10	0-14	3	3- 0	8	0-12	2	2- 5	5	0- 8	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
1914	0-15	2	0- 0	0	0- 0	0	0- 5	1	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0-10	1	0- 0	0	0- 0	0	....
1915	13-10	28	0- 0	0	0- 0	0	1- 7	4	0-12	2	3- 7	8	3- 0	6	2- 3	4	1-10	3	0- 0	0	1- 3	1	....
Average	**8.7**	**21**	**0.7**	**3**	**0.4**	**1**	**1.6**	**5**	**0.7**	**2**	**2.3**	**5**	**1.5**	**3**	**0.5**	**1**	**0.7**	**1**	**0**	**0**	**0.3**	**0.3**	....
Cull fruits—																						
1912	7- 0	24	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	11- 4	29	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	1- 0	6	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1915	7- 5	20	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Average	**6.6**	**20**	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
Total crop—																						
1912	85- 7	178	1- 3	5	1- 6	4	2-15	8	9- 4	22	13-14	29	25-14	48	2-14	5	15- 6	25	4-15	7	0-12	1	4
1913	39-15	109	3- 1	13	2- 1	7	11- 3	32	3- 8	9	6-12	15	1- 9	3	0- 9	1	0- 0	0	0- 0	0	0- 0	0	0
1914	19-11	42	0- 4	1	0- 5	1	0- 5	1	0-12	2	6-15	14	5- 2	9	4- 6	7	0-10	1	0- 0	0	0- 0	0	2
1915	94- 3	179	0- 0	0	0- 4	1	2- 2	6	3- 8	9	16- 7	36	20- 1	38	23- 4	39	13-12	21	3- 0	4	4- 8	5	0
Average	**59.8**	**127**	**1.1**	**5**	**1.0**	**3**	**4.1**	**12**	**4.3**	**11**	**11.0**	**24**	**13.2**	**25**	**7.8**	**13**	**7.4**	**12**	**2.0**	**3**	**1.3**	**2**	**1**
478. Yellow Washington strain:																						
Orchard grade—																						
1912	41- 0	99	0- 0	0	0- 7	2	3- 2	10	9- 9	26	13- 0	31	6- 7	14	6-12	13	1- 1	2	0-10	1	0- 0	0	....
1913	6- 6	12	0- 0	0	0- 0	0	0- 6	1	0- 0	0	0- 0	0	0-15	2	1- 8	3	1-12	3	1-13	3	0- 0	0	....
1914	71-12	172	1- 4	5	3-14	13	10-13	31	16- 8	42	16- 0	37	12-12	26	6- 0	11	1-14	3	2-11	4	0- 0	0	....
1915	31- 2	60	0- 0	0	0- 0	0	1- 0	3	3- 5	8	3-10	8	11- 4	22	5- 3	9	3-12	6	2- 3	3	0-13	1	....
Average	**37.6**	**86**	**0.3**	**1**	**1.1**	**4**	**3.8**	**11**	**7.3**	**19**	**8.2**	**19**	**7.8**	**16**	**4.9**	**9**	**2.1**	**4**	**1.8**	**3**	**0.2**	**0.3**	....
Standard grade—																						
1912	9- 5	25	0- 0	0	0- 0	0	1- 2	4	2- 1	6	5- 2	13	0- 8	1	0- 8	1	0- 0	0	0- 0	0	0- 0	0	....
1913	3- 2	7	0- 0	0	0- 0	0	0- 0	0	1- 8	4	0- 7	1	0- 0	0	1- 3	2	0- 0	0	0- 0	0	0- 0	0	....
1914	9-13	25	0-10	3	0-15	3	1- 6	4	3- 4	8	1-14	4	0- 9	1	0- 9	1	0-10	1	0- 0	0	0- 0	0	....
1915	18- 7	41	0- 3	1	0- 8	2	3- 1	8	3- 4	8	4- 4	9	7- 3	13	0- 0	0	0- 0	0	0- 0	0	0- 0	0	....
Average	**10.2**	**25**	**0.2**	**1**	**0.4**	**1**	**1.4**	**4**	**2.5**	**7**	**2.9**	**7**	**2.1**	**4**	**0.6**	**1**	**0.2**	**0.3**	**0**	**0**	**0**	**0**	....

TABLE V.—*Detailed statement of the annual performance of 64 representative Washington Navel orange trees for which records were obtained for four years, 1912 to 1915, inclusive, as summarized in Table IV*—Continued.

Rank in Table IV, strain, grade, and year.	Sizes.																						Number of variable fruits.
	Total.		288 and smaller.		250		216		200		176		150		126		112		96		80 and larger.		
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	
478. Yellow Washington strain—Continued.																							
Cull fruits—																							
1912	10–10	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	18– 0	48	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	2–12	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	4– 6	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**8.9**	**26**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	60–15	156	0– 0	0	0– 7	2	4– 4	14	11–10	32	18– 2	44	6–15	15	7– 4	14	1– 1	2	0–10	1	0– 0	0	0
1913	27– 8	67	0– 0	0	0– 0	0	0– 6	1	1– 8	4	0– 7	1	0–15	2	2–11	5	1–12	3	1–13	3	0– 0	0	0
1914	84– 5	207	1–14	8	4–13	16	12– 3	35	19–12	50	17–14	41	13– 5	27	6– 9	12	2– 8	4	2–11	4	0– 0	0	0
1915	53–15	113	0– 3	1	0– 8	2	4– 1	11	6– 9	16	7–14	17	18– 7	35	5– 3	9	3–12	6	2– 3	3	0–13	1	2
Average	**56.7**	**136**	**0.5**	**2**	**1.4**	**5**	**5.2**	**15**	**9.9**	**26**	**11.1**	**26**	**9.9**	**20**	**5.4**	**10**	**2.3**	**4**	**1.8**	**3**	**0.2**	**0.3**	**0.5**
481. Unproductive strain:																							
Orchard grade—																							
1912	39– 0	81	0– 0	0	1– 0	3	1–14	5	8– 5	20	10– 0	22	9– 6	18	1–10	3	5– 1	8	1–12	2	0– 0	0	....
1913	19– 1	54	0–15	4	3– 5	12	5– 8	16	5– 9	14	2– 4	5	1– 8	3	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....
1914	41– 8	98	0– 4	1	2– 4	7	6–12	19	12– 0	29	14–12	32	4– 4	8	1– 4	2	0– 0	0	0– 0	0	0– 0	0	....
1915	42–15	91	0– 0	0	0– 0	0	1– 4	4	7–14	20	9–14	22	13– 1	26	10–14	19	0– 0	0	0– 0	0	0– 0	0	....
Average	**35.6**	**81**	**0.3**	**1**	**1.6**	**6**	**3.8**	**11**	**8.4**	**21**	**9.2**	**20**	**7.0**	**14**	**3.4**	**6**	**1.3**	**2**	**0.4**	**0.5**	**0**	**0**	....
Standard grade—																							
1912	13– 1	32	0– 4	1	0– 5	1	1– 8	4	2– 1	5	5– 4	11	1–15	7	1–12	3	0– 0	0	0– 0	0	0– 0	0	....
1913	6– 3	23	3– 4	14	2– 2	7	0– 6	1	0– 0	0	0– 7	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	....

1914	1–15	6	0– 8	2	0–10	2	0– 6	1	0– 0	0	0– 7	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0 0–	0	....
1915	14– 4	33	0– 0	0	0– 8	2	1–10	5	1– 1	3	4–12	11	3– 5	7	1–11	3	0–10	1	0–11	1	0– 0	0	....
Average	**8.9**	**24**	**1.0**	**4**	**0.9**	**3**	**1.0**	**3**	**0.8**	**2**	**2.7**	**6**	**1.3**	**4**	**0.9**	**2**	**0.2**	**0.3**	**0.2**	**0.3**	**0**	**0**	....
Cull fruits—																							
1912	4–15	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	5– 6	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	1– 0	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1915	4– 1	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	**3.8**	**13**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total crop—																							
1912	57– 0	125	0– 4	1	1– 5	4	3– 6	9	10– 6	25	15– 4	33	11– 5	25	3– 6	6	5– 1	8	1–12	2	0– 0	0	6
1913	30–10	97	4– 3	18	5– 7	19	5–14	17	5– 9	14	2–11	6	1– 8	3	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0
1914	44– 7	113	0–12	3	2–14	9	7– 2	20	12– 0	29	15– 3	33	4– 4	8	1– 4	2	0– 0	0	0– 0	0	0– 0	0	0
1915	61– 4	136	0– 0	0	0– 8	2	2–14	9	8–15	23	14–10	33	16– 6	33	12– 9	22	0–10	1	0–11	1	0– 0	0	0
Average	**48.3**	**118**	**1.3**	**6**	**2.5**	**9**	**4.8**	**14**	**9.2**	**23**	**11.9**	**26**	**8.4**	**17**	**4.3**	**8**	**1.4**	**2**	**0.6**	**0.8**	**0**	**0**	**2**

Table IV includes all the trees listed in Table II, and it is interesting to note the relative position of these trees when they are listed according to their rank for the two periods. Tables VI and VII show these comparisons for some of the highest and some of the lowest producing trees.

TABLE VI.—*Comparative rank of the 19 of the 40 highest producing and of the 17 of the 40 lowest producing Washington Navel orange trees in the 4-year performance record plats on which data were also obtained for the 6-year period.*

[Trees marked with an asterisk (*) are not included in the 6-year record plat.]

Highest producing trees.				Lowest producing trees.			
Tree designation.	Rank for the 4-year period.		Rank for the 6-year period.[2]	Tree designation.	Rank for the 4-year period.		Rank for the 6-year period.
	The 40 highest producing trees.[1]	The 19 trees for which records have been obtained for 6 years.			The 40 lowest producing trees.	The 17 trees for which records have been obtained for 6 years.	
3-14-27	1	1	1	*6:1-55- 5	1	....	....
3-12-28	2	2	2	*10:2- 7-17	2	....	....
*11-52-13	3	....	....	7:1-52- 3	3	1	1
*11-52-15	4	....	....	*SM-3-32-15	4	....	....
3-13-29	5	3	3	*7:1-53-11	5	....	....
3-13-28	6	4	6	7:1-67-13	6	2	4
*3-23-27	7	....	....	7:1-65-23	7	3	2
3-12-29	8	5	5	7:1-66-12	8	4	5
*11-52-14	9	....	....	*6:1-71-10	9	....	....
3-12-30	10	6	7	*SM-3-29-16	10	....	....
3-14-26	11	7	4	*SM-3-32-20	11	....	....
*8-16-20	12	....	....	7:1-66-10	12	5	3
*7:2-34- 2	13	....	....	7:1-68-12	13	6	6
*3-22-27	14	....	....	*6:1-71- 7	14	....	....
*11-52-12	15	....	....	7:1-68-14	15	7	8
4-27-16	16	8	9	*SM-3-33-15	16	....	....
7:2-37- 1	17	9	11	*6:1-64- 3	17	....	....
7:2-25- 1	18	10	10	7:1-68- 8	18	8	7
10:1-28- 9	19	11	14	*SM-3-33-12	19	....	....
*3-13-25	20	....	....	7:1-67- 6	20	9	9
*3-14-23	21	....	....	*7:1-51-20	21	....	....
*5-41- 7	22	....	....	*10:2- 6-13	22	....	....
10:1-29- 2	23	12	20	7:1-67- 9	23	10	10
*7:2-30- 1	24	....	....	*10:2- 8-14	24	....	....
7:2-32- 3	25	13	15	*SM-3-32-17	25	....	....
*5-36- 1	26	....	....	7:1-67- 8	26	11	13
10:1-29- 8	27	14	12	*SM-3-25-16	27	....	....
3-14-25	28	15	8	*SM-3-33-14	28	....	....
*5-40- 4	29	....	....	*10:2- 6-12	29	....	....
*5-41- 6	30	....	....	*SM-3-33-13	30	....	....
10:1-32- 6	31	16	18	*10:2- 8-15	31	....	....
*5-40- 5	32	....	....	7:1-67-12	32	12	15
4-23- 3	33	17	19	7:1-68-10	33	13	11
*9- 2- 5	34	....	....	*7:1-53-12	34	....	....
*7:2- 8- 1	35	....	....	7:1-67- 7	35	14	12
*7:2-17- 2	36	....	....	7:1-68- 9	36	15	14
*5-38- 6	37	....	....	*SM-3-31-14	37	....	....
*7:1-59-11	38	....	....	7:1-68- 6	38	16	17
7:2-25- 3	39	18	21	*SM-3-30-15	39	....	....
10:1-30- 9	40	19	30	7:1-68-13	40	17	16

[1] Ranked as shown in Table IV.

[2] Ranked as shown in Table II.

Table VI shows the comparative rank of 19 trees on which records have been secured for six years, which are among the 40 highest producing trees in the 4-year plat. Column 3 in this table shows the 4-year rank in which the trees would be listed if only those were recorded on which data had also been secured for six years, and column 4 shows the rank secured by the same trees on the basis of their 6-year performance records as shown in Table II. The facts that the same trees appear in the first three ranks in both summaries and that the other trees represented are so nearly identical in their rank for the two periods show that for all practical purposes performance records of full-bearing trees for four years are as satisfactory as those for six years.

This is additional evidence in support of the general proposition that the variation in the amount of the annual crops produced by a given series of individual Washington Navel orange trees is relatively uniform throughout the series each year; that is, the highest producing trees in any one year are in general the highest producing ones each year, and the lowest producing ones remain at the bottom of the list continually. Table VI also offers additional support of the general proposition that individual trees are relatively very stable over a series of years in the character and the amount of their fruit production.

Table VI also shows the relative ranks of the lowest producing trees recorded for both the 4-year and 6-year periods. The individual trees listed here are even more nearly identical in their rank for the two periods than were those in the highest producing ranks, giving additional evidence in support of the truths just stated.

Table VII shows the annual performance record of a tree of the Productive Washington strain for the season of 1914 and also the 6-year period performance record of the same tree. This table is presented for the purpose of comparison with Table VIII, showing the annual and period performance records of a tree of the Unproductive strain, and with Table IX, showing the annual and period performance records of a tree of the Wrinkled Australian strain. These tables illustrate the form in which the data have been recorded during all the investigational work on which this publication is based, except that in order to economize space the form for recording the detailed data for 1914 has been rearranged.

These records show the comparative behavior of typical examples of three Washington Navel orange strains which are of great importance in the study of the origin of varieties by bud selection. The marked variations in the quantity and commercial quality of the fruit borne by these trees illustrate the relative value of these strains and are typical of the differences in production that exist in other strains of this variety.

TABLE VII.—*Performance record of the Washington Navel orange tree No. 3-14-27, Productive Washington strain, showing the weight and number of the fruits of each grade and size and the variable fruits produced, detailed for the season of 1914 and summarized for a period of six seasons, 1910 to 1915, inclusive.*

[The summarized record illustrates the method of assembling the data of successive seasons for careful comparison and study. In practice, the variable fruits produced by the tree each season are listed on the back of the form. The weights are given in pounds and ounces, except that the 6-year totals and the averages are expressed decimally in pounds. This tree is listed in rank 1 in Tables II, III, IV, and V.]

DETAILED RECORD FOR THE SEASON OF 1914.[1]

Sizes of fruits.	Orchard grade.		Standard grade.		Total.		Cull fruits.		Grand total.	
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.
288 and smaller	1-10	8	1- 1	6	2-11	14	....	......	....	......
250	5- 6	19	0-15	3	6- 5	22	....	......	....	......
216	19-14	59	2-10	7	22- 8	66	....	......	....	......
200	51-15	133	2-12	7	54-11	140	....	......	....	......
176	126-10	277	6-12	16	133- 6	293	....	......	....	......
150	125-12	238	4- 9	9	130- 5	247	....	......	....	......
126	99- 6	167	4- 8	8	103-14	175	....	......	....	......
112	21-14	33	1- 4	2	23- 2	35	....	......	....	......
96	8- 4	11	0- 0	0	8- 4	11	....	......	....	......
80 and larger	0-13	1	0- 0	0	0-13	1	....	......	....	......
Total	461- 8	946	24- 7	58	485-15	1,004	17-4	38	503-3	1,042

SUMMARIZED RECORD FOR SIX SEASONS.

Grades and sizes.	1910	1911	1912	1913	1914	1915	Total.	Average.
Weight of fruits:								
Orchard grade	382- 7	271-14	315- 0	152-14	461- 8	352- 2	1,935.8	322.6
Standard grade	7-10	27-15	23-11	34- 7	24- 7	78-12	196.9	32.8
Culls [2]	0- 0	23-14	16- 3	103-12	17- 4	69-13	230.9	38.5
Grand total	390- 1	323-11	354-14	291- 1	503- 3	500-11	2,363.6	393.9
Sizes—								
288 and smaller	2- 9	0- 4	3- 5	0- 7	2-11	0- 5	9.6	1.6
250	11-12	0- 0	4- 2	1-13	6- 5	1- 2	25.1	4.2
216	15- 8	0-12	7- 0	11- 1	22- 8	7- 1	63.9	10.6
200	48-11	2- 8	32-11	15- 1	54-11	18- 8	172.7	28.8
176	66-10	6- 1	32-11	32- 6	133- 6	41- 7	312.6	52.1
150	98- 0	35- 7	90- 1	47- 6	130- 5	79- 5	480.5	80.1
126	28-14	8- 7	30- 2	45- 1	103-14	139-11	356.1	59.3
112	70-11	62- 2	79-13	15-13	23- 2	73- 3	324.8	54.1
96	28- 7	98-12	41- 0	10- 0	8- 4	46- 3	232.6	38.8
80 and larger	18-15	85- 8	17-14	7-12	0-13	24- 1	154.9	25.8
Total	390- 1	299-13	338-11	187- 5	485-15	430-14	2,132.7	355.4
Number of fruits:								
Orchard grade	738	385	581	310	946	661	3,621	603.5
Standard grade	19	45	57	80	58	151	410	68.3
Culls [2]	0	38	41	311	38	165	593	98.8
Grand total	757	468	679	701	1,042	977	4,624	770.6
Sizes—								
288 and smaller	10	1	14	2	14	2	43	7.2
250	36	0	13	6	22	4	81	13.5
216	41	2	19	34	66	21	183	30.5
200	117	6	80	43	140	49	435	72.5
176	141	13	72	77	293	98	694	115.7
150	189	66	174	98	247	165	939	156.5
126	49	15	54	80	175	252	625	104.2
112	111	98	131	25	35	120	520	86.7
96	40	135	59	15	11	69	329	54.8
80 and larger	23	94	22	10	1	32	182	30.2
Total	757	430	638	390	1,004	812	4,031	671.8

---

[1] Fine quality fruit; 11½ boxes. Variable fruits: Australian, 1; protruding, 3; ridged, 3; abnormal shape, 1; split navel, 7; split side, 3.

[2] The excessive number of culls occurring in 1913 was largely caused by the severe freeze of that season.

TABLE VIII.—*Performance record of the Washington Navel orange tree No. 7:1–66–12, Unproductive strain, showing the number and weight of the fruits of each grade and size and the variable fruits produced, detailed for the season of 1914 and summarized for a period of six seasons, 1910 to 1915, inclusive.*

[The summarized record illustrates the method of assembling the data of successive seasons for careful comparison and study. In practice the variable fruits produced by the tree each season are listed on the back of the form. The weights are given in pounds and ounces, except that the 6-year totals and the averages are expressed decimally in pounds. This tree is listed in rank 147 in Table II and in rank 474 in Table IV.]

DETAILED RECORD FOR THE SEASON OF 1914.[1]

Sizes of fruits.	Orchard grade.		Standard grade.		Total.		Cull fruits.		Grand total.	
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.
288 and smaller	0–12	3	4– 7	21	5– 3	24	....	......	....	......
250	0–14	3	0– 0	0	0–14	3	....	......	....	......
216	5– 0	14	2– 9	7	7– 9	21	....	......	....	......
200	3– 9	9	0– 0	0	3– 9	9	....	......	....	......
176	6– 8	14	0–14	2	7– 6	16	....	......	....	......
150	1– 9	3	0– 0	0	1– 9	3	....	......	....	......
126	2– 0	3	0– 0	0	2– 0	3	....	......	....	......
112	0–11	1	0– 0	0	0–11	1	....	......	....	......
96	0– 0	0	0– 0	0	0– 0	0	....	......	....	......
80 and larger	0– 0	0	0– 0	0	0– 0	0	....	......	....	......
Total	20–15	50	7–14	30	28–13	80	2– 2	14	30–15	94

SUMMARIZED RECORD FOR SIX SEASONS.

Grades and sizes.	1910	1911	1912	1913	1914	1915	Total.	Average.
Weight of fruits:								
Orchard grade	60– 7	48– 4	74– 1	46–13	20–15	33– 3	283.7	47.3
Standard grade	12– 7	12–10	13– 1	18–15	7–14	49– 0	113.9	19.0
Culls	0– 0	3– 0	8–11	19– 3	2– 2	4–11	37.7	6.3
Grand total	72–14	63–14	95–13	84–15	30–15	86–14	435.3	72.6
Sizes—								
288 and smaller	2– 7	1–13	31– 2	6–15	5– 3	3– 2	50.6	8.4
250	5– 1	9– 2	27– 1	9– 9	0–14	0– 0	51.7	8.6
216	7– 7	5–14	14– 4	12–12	7– 9	4–10	52.5	8.8
200	13– 6	15–13	11–11	9– 1	3– 9	4– 6	57.9	9.7
176	15–11	10– 8	2– 8	10– 2	7– 6	6–10	52.8	8.8
150	18– 7	11–10	0– 8	9– 4	1– 9	15–10	57.0	9.5
126	3– 7	3– 4	0– 0	7– 6	2– 0	15–13	31.9	5.3
112	4– 6	2–14	0– 0	0– 0	0–11	9–14	17.8	3.0
96	2–10	0– 0	0– 0	0–11	0– 0	8– 5	11.6	1.9
80 and larger	0– 0	0– 0	0– 0	0– 0	0– 0	13–13	13.8	2.3
Total	72–14	60–14	87– 2	65–12	28–13	82– 3	397.6	66.3
Number of fruits:								
Orchard grade	145	116	243	127	50	68	749	124.8
Standard grade	29	30	54	52	30	94	289	48.2
Culls	0	7	53	60	14	15	149	24.8
Grand total	174	153	350	239	94	177	1,187	197.8
Sizes—								
288 and smaller	9	7	132	29	24	16	217	36.2
250	16	28	87	34	3	0	168	28.0
216	22	16	41	37	21	14	151	25.2
200	35	38	30	24	9	12	148	24.7
176	36	23	6	23	16	16	120	20.0
150	39	23	1	18	3	32	116	19.3
126	6	6	0	13	3	28	56	9.3
112	7	5	0	0	1	16	29	4.8
96	4	0	0	1	0	12	17	2.8
80 and larger	0	0	0	0	0	16	16	2.7
Total	174	146	297	179	80	162	1,038	173.0

---

[1] Total crop, one-half box. Variable fruits: Protruding, 3; split navel, 3.

TABLE IX.—*Performance record of the Washington Navel orange tree No. 7:1–56–5, Wrinkled Australian strain, showing the number and weight of the fruits of each grade and size and the variable fruits produced, detailed for the season of 1914 and summarized for a period of four seasons, 1912 to 1915, inclusive.*

[The summarized record illustrates the method of assembling the data of successive seasons for careful comparison and study. In practice the variable fruits produced by the tree each season are listed on the back of the form. The weights are given in pounds and ounces, except that the 4-year totals and the averages are expressed decimally in pounds. This tree is listed in rank 412 in Tables IV and V.]

DETAILED RECORD FOR THE SEASON OF 1914.[1]

Sizes of fruits.	Orchard grade.		Standard grade.		Total.		Cull fruits.		Grand total.	
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.
288 and smaller	0-12	3	3-0	16	3-12	19				
250	0-10	2	5-0	16	5-10	18				
216	1-12	5	19-2	53	20-14	58				
200	4-5	12	11-3	28	15-8	40				
176	2-2	5	27-4	61	29-6	66				
150	0-0	0	21-4	42	21-4	42				
126	0-0	0	24-12	27	24-12	27				
112	0-0	0	3-0	5	3-0	5				
96	0-0	0	0-11	1	0-11	1				
80 and larger	0-0	0	0-0	0	0-0	0				
Total	9-9	27	115-4	249	124-13	276	5-15	29	130-12	305

SUMMARIZED RECORD FOR FOUR SEASONS.

Grades and sizes.	1912	1913	1914	1915	Total.	Average.
Weight of fruits:						
Orchard grade	89-3	41-2	9-9	8-6	148.2	37.1
Standard grade	58-0	78-0	115-4	59-15	311.2	77.8
Culls	11-5	23-2	5-15	4-2	44.5	11.1
Grand total	158-8	142-4	130-12	72-7	503.9	126.0
Sizes—						
288 and smaller	13-5	37-6	3-12	1-4	55.7	13.9
250	25-12	26-4	5-10	1-12	59.4	14.9
216	26-15	28-14	20-14	6-10	83.3	20.8
200	40-1	14-15	15-8	10-8	81.0	20.3
176	24-15	7-0	29-6	14-2	75.4	18.9
150	13-14	4-3	21-4	22-3	61.5	15.4
126	1-11	0-8	24-12	7-9	34.5	8.6
112	0-10	0-0	3-0	1-11	5.3	1.3
96	0-0	0-0	0-11	2-10	3.3	0.8
80 and larger	0-0	0-0	0-0	0-0	0.0	0
Total	147-3	119-2	124-13	68-5	459.4	114.9
Number of fruits:						
Orchard grade	237	126	27	18	408	102.0
Standard grade	196	310	249	145	900	225.0
Culls	46	96	29	12	183	45.8
Grand total	479	532	305	175	1,491	372.8
Sizes—						
288 and smaller	92	181	19	6	298	74.5
250	78	100	18	6	202	50.5
216	74	88	58	20	240	60.0
200	101	40	40	28	209	52.25
176	56	17	66	35	174	43.5
150	28	9	42	47	126	31.5
126	3	1	27	14	45	11.25
112	1	0	5	3	9	2.25
96	0	0	1	4	5	1.25
80 and larger	0	0	0	0	0	0
Total	433	436	276	163	1,308	327.0

---

[1] Total crop, 2¼ boxes. Variable fruits: Wrinkled, 256; split side, 1.

TABLE X.—*Performance record of the Washington Navel orange tree No. 11–52–13, Productive Washington strain, showing the number and weight of the fruits of each grade and size produced, summarized for a period of five seasons, 1911 to 1915, inclusive.*

[This table shows a steady increase in production. The weights are given in pounds and ounces, except that the 5-year totals and the averages are expressed decimally in pounds. This tree is listed in rank 3 in Tables IV and V.]

Grades and sizes.	1911	1912	1913	1914	1915	Total.	Average.
Weight of fruits:							
Orchard grade	267– 5	334–12	250– 0	392–15	390– 4	1,635.3	327.1
Standard grade	12–11	31– 7	72– 7	13– 1	92– 0	221.6	44.3
Culls [1]	5– 2	10– 6	24– 4	3–12	11– 8	55.0	11.0
Total	285– 2	376– 9	346–11	409–12	493–12	1,911.9	382.4
Sizes—							
288 and smaller	0– 6	5– 9	13–10	13–12	6– 8	39.8	7.96
250	0–15	14–10	32– 1	21–12	2– 8	71.9	14.38
216	1– 8	20– 9	61–14	79–10	8– 8	172.1	34.42
200	6–12	66–12	62– 6	92– 3	17–11	245.8	49.16
176	13–12	67– 0	75– 7	118– 1	65–10	339.9	67.98
150	43–14	104– 8	50–11	58– 2	109– 9	366.7	73.34
126	10– 0	17–11	23– 2	16– 2	157–15	224.9	44.98
112	56– 9	53–13	3– 4	3– 6	61–13	178.8	35.76
96	88– 6	15–11	0– 0	2– 4	34–10	140.9	28.18
80 and larger	57–14	0– 0	0– 0	0–12	17– 8	76.1	15.22
Total	280– 0	366– 3	322– 7	406– 0	482– 4	1,856.9	371.38
Number of fruits:							
Orchard grade	416	726	629	942	782	3,495	699
Standard grade	25	77	204	54	206	566	113
Culls [1]	26	30	79	13	38	186	37
Total	467	833	912	1,009	1,026	4,247	849
Sizes—							
288 and smaller	2	22	58	73	35	190	38
250	3	45	111	73	9	241	48
216	4	58	181	198	26	467	93
200	16	169	160	235	48	628	126
176	30	148	173	264	155	770	154
150	83	210	103	116	233	745	149
126	18	33	42	28	299	420	84
112	91	94	5	5	105	300	60
96	125	24	0	3	54	206	41
80 and larger	69	0	0	1	24	94	19
Total	441	803	833	996	988	4,061	812

[1] The large number of culls occurring in 1913 were caused by the severe freeze of that season.

The seasonal variation in production within a strain is illustrated in Tables X, XI, and XII. Table X shows the period performance record for five seasons of the tree of the Productive Washington strain which is listed in rank 3 in Tables IV and V. This record shows a regular increase in production from year to year, a condition which is most desirable from the standpoint of profitable orange growing. Table XI shows the period performance record for five seasons of the tree of the Productive Washington strain which is listed in rank 262 in Tables IV and V. This record is comparable with that in Table X, but shows a gradual decrease in production, a condition which is undesirable. Table XII shows the period performance record of the tree of the Productive Washington strain which is listed in rank 50 in Table II and in rank 87 in Table IV. This record illustrates the alternate-bearing habit of many of the trees under observation. A heavy crop is followed by a lighter one the next season, but the production gradually increases during a period of several years. The freeze of 1913 reduced the yield of that season below normal, which explains the apparent exception to this rule shown in the production of that year in this table. The trees having a habit of regular production are more desirable than those having a habit of alternate production, but the alternate-bearing trees may not be unprofitable to the grower. In propagation work, buds should be selected only from trees which show a regular and increasing production. The desirability of top-working alternate-bearing trees will depend upon the profitableness of their yield during several seasons, preferably for an even number of years. The trees showing a regular decrease in yield should be top-worked when their production is no longer profitable, using buds from trees producing heavy and regular crops.

Table XIII shows the variation in average yields for a 4-year performance-record period of all the trees under observation, arranged in groups illustrating the comparative behavior of different strains and of select trees within some of these strains.

TABLE XI.—*Performance record of the Washington Navel orange tree No. 7:1–51–16, Productive Washington strain, showing the number and weight of the fruits of each grade and size produced, summarized for a period of five seasons, 1911 to 1915, inclusive.*

[This table plainly shows a gradual decrease in production. The weights are given in pounds and ounces, except that the 5-year totals and the averages are expressed decimally in pounds. This tree is listed in rank 262 in Tables IV and V.]

Grades and sizes.	1911	1912	1913	1914	1915	Total.	Average.
Weight of fruits:							
Orchard grade	276–15	258– 8	128– 5	149– 7	106– 6	919.6	183.92
Standard grade	21–10	14–13	22– 3	20– 7	7–11	86.7	17.34
Culls[1]	2– 0	18– 4	35– 0	7– 2	8– 8	70.9	14.18
Total	300– 9	291– 9	185– 8	177– 0	122– 9	1,077.2	215.44
Sizes—							
288 and smaller	1– 6	27– 0	24– 7	7–14	2– 0	62.7	12.54
250	7– 2	43– 7	32– 2	20– 3	2– 2	105.0	21.00
216	11– 0	40– 6	39– 5	35– 1	12– 8	138.3	27.66
200	37– 0	76–14	23– 7	40– 7	17– 4	195.0	39.00
176	39–10	42–15	21–15	55– 1	27–11	187.3	37.46
150	101– 0	32– 4	6– 6	6– 1	24– 9	170.2	34.04
126	14–11	5– 5	2– 5	5– 3	19– 0	46.5	9.30
112	57– 5	5– 2	0– 9	0– 0	5–10	68.6	13.72
96	20–15	0– 0	0– 0	0– 0	3– 5	24.2	4.84
80 and larger	8– 8	0– 0	0– 0	0– 0	0– 0	8.5	1.70
Total	298– 9	273– 5	150– 8	169–14	114– 1	1,006.3	201.26
Number of fruits:							
Orchard grade	519	696	389	376	240	2,220	444
Standard grade	48	54	84	66	24	276	55
Culls[1]	4	73	150	34	29	290	58
Total	571	823	623	476	293	2,786	557
Sizes—							
288 and smaller	6	108	107	35	10	266	53.2
250	22	140	114	66	7	349	69.8
216	29	117	121	98	37	402	80.4
200	88	200	62	100	46	496	99.2
176	84	99	51	122	65	421	84.2
150	180	67	13	12	51	323	64.6
126	25	10	4	9	34	82	16.4
112	92	9	1	0	9	111	22.2
96	30	0	0	0	5	35	7.0
80 and larger	11	0	0	0	0	11	2.2
Total	567	750	473	442	264	2,496	499.2

---

[1] The large number of culls occurring in 1913 were caused by the severe freeze of that season.

TABLE XII.—*Performance record of the Washington Navel orange tree No. 4–23–2, Productive Washington strain, showing the number and weight of the fruits of each grade and size produced, summarized for a period of six seasons, 1910 to 1915, inclusive.*

[This table plainly shows the tendency of this tree to bear heavier crops in alternate seasons. The weights are given in pounds and ounces, except that the 6-year totals and the averages are expressed decimally in pounds. This tree is listed in rank 50 in Table II and in rank 87 in Table IV.]

Grades and sizes.	1910	1911	1912	1913	1914	1915	Total.	Average.
Weight of fruits:								
Orchard grade	246– 0	138– 4	242– 3	66– 7	319–10	192– 0	1,204.5	200.75
Standard grade	8– 1	21– 8	14– 3	40– 9	33– 2	30– 3	147.6	24.60
Culls[1]	0– 0	9– 4	4– 6	54–14	4– 4	11– 0	83.8	13.97
Total	254– 1	169– 0	260–12	161–14	357– 0	233– 3	1,435.9	239.32
Sizes—								
288 and smaller	1–14	0– 4	3– 6	6– 3	2– 3	0– 3	14.1	2.35
250	7–14	0– 5	8– 4	9– 0	4– 9	1– 2	31.1	5.18
216	12–10	0– 6	8– 6	19– 0	16–10	1–10	58.6	9.76
200	33– 4	4–14	33– 5	14– 4	26–13	6– 3	118.7	19.78
176	45– 9	10–10	39– 8	18–10	82–15	24– 9	221.8	36.97
150	64–14	22– 4	65–11	19– 3	90– 1	51–14	313.9	52.32
126	24– 3	6– 2	15– 3	15– 2	87–15	71–11	220.3	36.72
112	34– 2	43– 5	51–12	2–12	23– 2	24– 7	179.5	29.92
96	29–11	44– 0	22–14	2– 1	15– 2	20–11	134.4	22.40
80 and larger	0– 0	27–10	8– 1	0–13	3– 6	19–13	59.7	9.95
Total	254– 1	159–12	256– 6	107– 0	352–12	222– 3	1,352.1	225.35
Number of fruits:								
Orchard grade	484	205	476	167	614	332	2,278	380
Standard grade	19	35	35	117	70	56	332	55
Culls[1]	0	30	12	179	11	29	261	44
Total	503	270	523	463	695	417	2,871	479
Sizes—								
288 and smaller	12	1	14	27	10	1	65	11
250	25	1	25	33	16	4	104	17
216	35	1	23	60	47	5	171	29
200	79	11	81	39	67	15	292	49
176	96	22	85	46	177	54	480	80
150	120	40	127	42	167	100	596	99
126	41	10	27	28	142	119	367	61
112	56	67	85	5	34	37	284	47
96	39	58	34	3	20	29	183	31
80 and larger	0	29	10	1	4	24	68	11
Total	503	240	511	284	684	388	2,610	435

[1] The large number of culls in 1913 were caused by the severe freeze of that season.

TABLE XIII.—*Average annual crop of individual Washington Navel orange trees of several of the important strains found in the investigational performance-record plats, ranked according to the weight of their average total crops and showing production, by commercial grades, for four years, 1912 to 1915, inclusive.*

Number of trees.	Description of trees.	Average annual production per tree (pounds).			
		Total crop.	Orchard grade.	Standard grade.	Cull fruits.
10	Highest producing (all Washington strain)	373.3	293.8	49.8	29.7
4	Thomson-Washington strain	267.2	224.4	32.3	10.5
1	Yellow Thomson strain	264.3	173.9	47.6	42.8
2	Sporting Thomson strain	231.4	163.7	42.0	25.7
51	Thomson strain	226.8	185.3	31.0	10.5
363	Washington strain	207.4	163.4	27.6	16.4
8	Golden Nugget strain	199.5	127.7	32.1	39.7
1	Washington-Thomson strain	150.4	128.8	15.1	6.5
2	Wrinkled Australian strain	144.1	42.4	85.4	16.3
1	Sporting Washington strain	140.0	51.5	72.3	16.2
13	Yellow Washington strain	114.7	85.8	15.6	13.3
10	Lowest producing, Washington strain	106.5	80.7	18.7	7.1
35	Unproductive strain	83.2	59.4	16.2	7.6
10	Lowest producing (irrespective of strain)	63.0	42.8	13.0	7.2
	General average	198.0	155.2	27.4	15.4

The groups do not include equal numbers of trees, so no attempt should be made to draw final conclusions from Table XIII as to the exact behavior of the different strains represented. Although the average of the crops of the 51 trees of the Thomson strain is higher than the average of the 363 trees of the Washington strain, the heaviest producing individual trees are of the Washington strain. If the average of the Washington strain can be raised by bud selection to the average of the best trees within this strain as indicated by these investigations, then the strain as a whole will be more productive than the Thomson strain. The superior quality of the fruit of the Washington strain, as mentioned in the description of that strain, is an added reason for its propagation.

Table XIV shows the same groups of trees as those in Table XIII, but arranged in the order of their average individual tree production of first-grade fruit. On this basis of rank, the 10 highest producing trees of the Washington strain retain their position in first place. Table XIV, together with Table XIII, brings out the fact established in these investigations that the heaviest yielding trees also produce the largest quantity of first-grade fruit, and the lowest yielding trees produce the smallest quantity of fruit of this grade.

TABLE XIV.—*Average annual crop of individual Washington Navel orange trees of several of the important strains found in the investigational performance-record plats, ranked according to the weight of the fruits of the Orchard grade produced and showing production, by commercial grades for four years, 1912 to 1915, inclusive.*

Number of trees.	Description of trees.	Average annual production per tree (pounds).			
		Orchard grade.	Standard grade.	Cull fruits.	Total crop.
10	Highest producing (all Washington strain)	293.8	49.8	29.7	373.3
4	Thomson-Washington strain	224.4	32.3	10.5	267.2
51	Thomson strain	185.3	31.0	10.5	226.8
1	Yellow Thomson strain	173.9	47.6	42.8	264.3
2	Sporting Thomson strain	163.7	42.0	25.7	231.4
363	Washington strain	163.4	27.6	16.4	207.4
1	Washington-Thomson strain	128.8	15.1	6.5	150.4
8	Golden Nugget strain	127.7	32.1	39.7	199.5
13	Yellow Washington strain	85.8	15.6	13.3	114.7
10	Lowest producing, Washington strain	80.7	18.7	7.1	106.5
35	Unproductive strain	59.4	16.2	7.6	83.2
1	Sporting Washington strain	51.5	72.3	16.2	140.0
10	Lowest producing (irrespective of strain)	42.8	13.0	7.2	63.0
2	Wrinkled Australian strain	42.4	85.4	16.3	144.1
	General average	155.2	27.4	15.4	198.0

Figure 9, which is prepared from the data presented in Table XIV, shows graphically the percentages of fruits of the Orchard, Standard, and Cull grades in the average annual crops of individual trees of some of the Washington Navel orange strains, ranked in the order of their production by weight of first-grade fruit. The commercial grades are assorted on the basis of appearance, including the shape of the fruit, color and texture of the rind, and its freedom from scars, blemishes, or abnormal markings. By reason of the higher color and smoother texture of the rind of the Thomson fruits there usually is a larger proportion of first-grade fruit produced by this strain than by the Washington, as is shown by the relative position of these two in this table. However, the quality of the Thomson fruits, as shown by the texture of the rag and the flavor of the juice, is inferior to that of the Washington fruits. It should be noted that in this diagram the two strains ranking highest are ones which have characteristics of both the Washington and Thomson strains. The first one, the Washington-Thomson, bears fruits having the appearance of those of the Washington strain, though the characteristics of flesh and

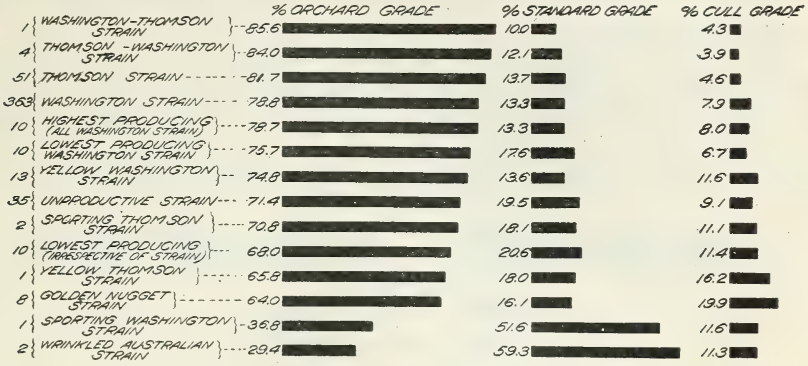


FIG. 9.—Diagram showing the percentages of fruit of the different commercial grades produced by the trees of the several strains of the Washington Navel orange in the investigational performance-record plats during a 4-year period, 1912 to 1915, inclusive. The strains are listed according to their proportion by weight of Orchard (or first) grade fruit.

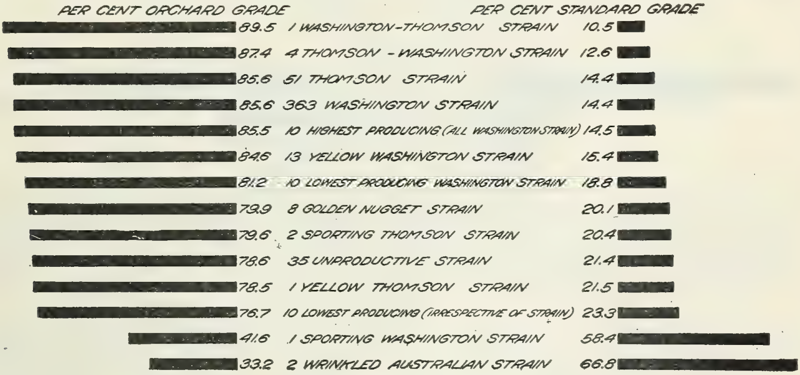


FIG. 10.—Diagram showing the percentages of Orchard and Standard grade fruit in the marketable crops of the trees of the several important strains of the Washington Navel orange found in the investigational performance-record plats during a 4-year period, 1912 to 1915, inclusive. The strains are listed according to their proportion by weight of Orchard (or first) grade fruit.

juice are very similar to those of the Thomson. The second in rank, the Thomson-Washington, bears fruits having the external appearance of the Thomson and the flesh and juice characteristics of the Washington strain. In order to interpret this diagram properly, it should be compared with Table XIV, which shows the actual average crops of the individual trees of these strains.

Figure 10 shows graphically the percentages of fruits of the Orchard and Standard grades in the marketable crops from trees of the various strains found in the investigational performance-record plats for the 4-year period. This diagram emphasizes the production of fruit of the Orchard grade. The commercial fruit grower makes no record of the quantity of cull fruit produced by his trees and hence the percentages given in this figure show the relative quantity of the commercial grades borne by the various strains more accurately than those in figure 9.

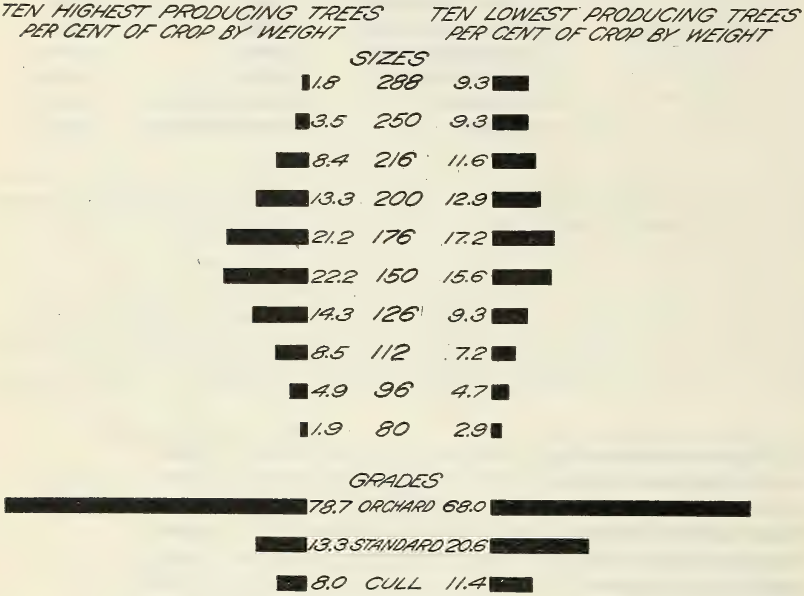


FIG. 11.—Diagram showing the production by commercial sizes and grades of the crops of the 10 highest and 10 lowest producing trees, irrespective of strain, in the investigational performance-record plats of the Washington Navel orange. The figures indicate the proportion of each size or grade to the total crop, calculated from the average weights during a 4-year period, 1912 to 1915, inclusive. Figure 12 shows similar comparisons based on the number of fruits produced.

Figure 10, like figure 9, is based on the records given in Table XIV and should be interpreted on the basis of those data.

Figure 11 shows the production by commercial sizes and grades of the 10 highest producing trees in the performance-record plats in comparison with the corresponding yields of the 10 lowest producing trees in these plats. The percentages shown are calculated from the weights of the fruits of the different groups. This diagram shows graphically the fact that the heaviest bearing trees produce the largest proportion of the most desirable and valuable sizes of fruits, namely, 200, 176, 150, and 126 fruits per box. The most productive trees also bear the largest proportion of the Orchard grade, or first-grade, fruits, as shown by this diagram. On the other hand, the lowest producing trees bear a much larger proportion of extremely small and extremely large fruits, both of which are usually undesirable from the market standpoint. Further, the lowest producing trees bear a smaller percentage of the first-grade and a larger percentage of second-grade and cull fruits than the highest producing trees.

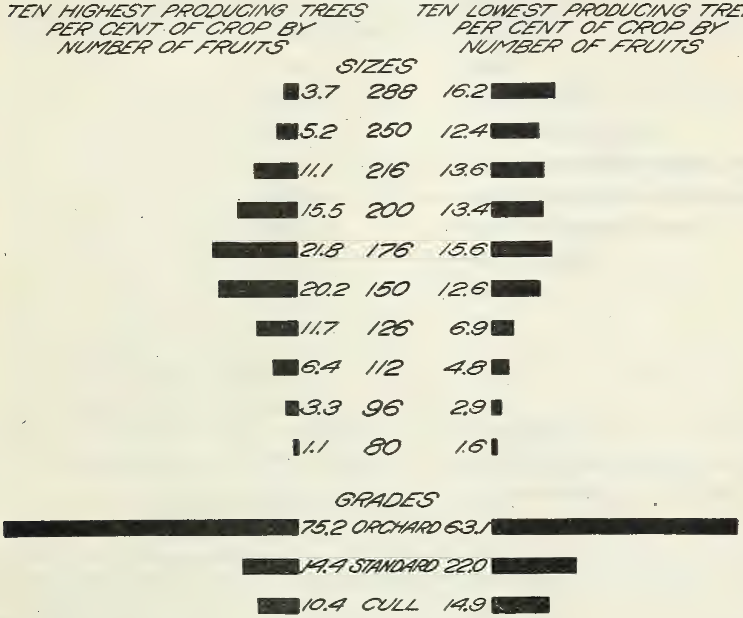


FIG. 12.—Diagram showing the production by commercial sizes and grades of the crops of the 10 highest and 10 lowest producing trees, irrespective of strain, in the investigational performance-record plats of the Washington Navel orange. The figures indicate the proportion of each size or grade to the total crop, calculated from the number of fruits produced during a 4-year period, 1912 to 1915, inclusive. Figure 11 shows similar comparisons based on the weight of the crop.

Figure 12 shows the same comparisons as figure 11, but in this case the percentages are based upon the number of fruits instead of their weights. This diagram brings out even more forcibly than does figure 11 the fact that the heaviest producing trees bear the largest proportion of the most desirable sizes and best grade of fruits.

This correlation of heavy yield and superior commercial grade in the production of Washington Navel orange trees of the Washington strain is very important from the standpoint of the standardization of the variety through bud selection based on performance records.

For this reason the propagation of the highest yielding trees means both larger and better crops of fruit.

In order to present more clearly the importance of the production of the more desirable commercial sizes of fruits by the heavy-yielding trees, figure 13 shows graphically, in terms of packed boxes, the proportions of the various sizes produced by the 10 highest and the 10 lowest yielding trees. This diagram emphasizes the large proportion of the most valuable commercial sizes (200, 176, 150, and 126) borne by the heavy-producing trees in comparison with the small number of fruits of these sizes borne by the low-yielding trees

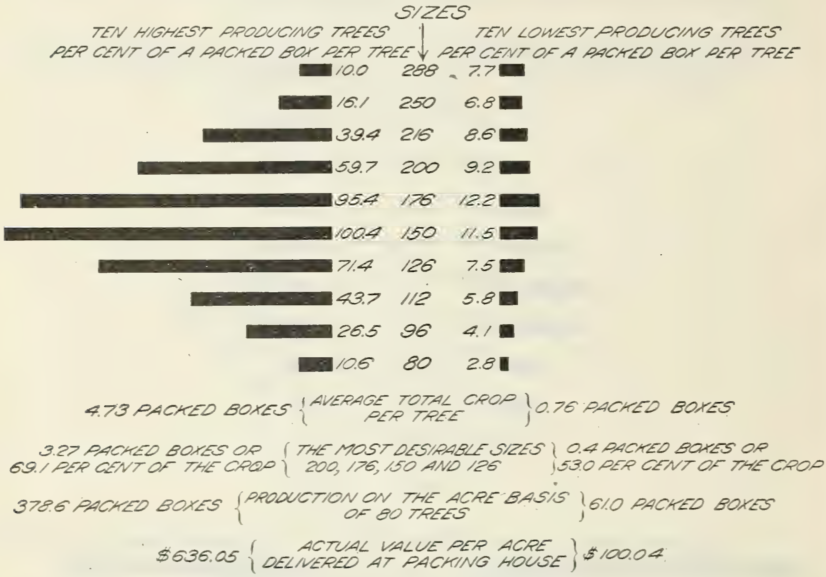


FIG. 13.—Diagram showing the average number of fruits of the various commercial sizes produced annually during a 4-year period by the 10 highest and 10 lowest yielding trees, irrespective of strain, in the investigational performance-record plats of the Washington Navel orange. This production is expressed as percentages of a packed box, calculated from the number of fruits of the different sizes. The percentage of most desirable sizes is also stated, and the production and value are calculated on the acre basis.

The highest producing trees bore an average of 4.73 packed boxes per tree, as compared with a yield of 0.76 of a packed box by the lowest producing trees. On an acre basis at the rate of planting in the performance-record plat, this yield amounted to 378.6 packed boxes per acre for the best trees, as compared with 61 packed boxes per acre for the lowest producing trees. The value of this production, figured on the basis of the actual prices obtained for the crops during the period of observation, was $636.05 per acre annually for the high-producing trees, as compared with $100.04 for the low-producing trees. The higher value of the crops from the high-producing trees is partially due to the fact that 69.1 per cent of their crops was of the most desirable sizes and 78.7 per cent was first-grade fruit, as compared with only 53 per cent of the most desirable sizes and 68 per cent of first-grade fruit produced by the low-yielding trees.

The production of variable fruits by trees of some of the important strains is shown graphically in figure 14. The low production of these inferior fruits by trees of the Washington strain, amounting to 0.66 per cent, as compared with the large production of such fruits borne by the Thomson, Golden Nugget, Sporting Thomson, Sporting Washington, and Wrinkled Australian strains, shows the superior quality of the Washington strain in this respect. The comparative freedom from variable fruits of many trees of the Washington strain and other characteristics of these trees indicate the possibility of controlling the amount of bud variability in commercial orchards by bud selection based on performance records. In counting the variable fruits on a tree, only those showing some marked variation from the general type of the fruits produced by that tree have been recorded; for instance, in the case of trees of the Yellow strain, only those fruits showing some marked variation from the Yellow strain have been listed as variable fruits. On the Sporting Washington and Thomson trees all fruits other than those typical of the Washington or Thomson strains have been listed as variable fruits. In trees of the Wrinkled Australian strain the fruits do not all show the characteristic coarse or wrinkled appearance, so that on these trees all fruits other than those of the Washington strain have been counted as variable fruits.

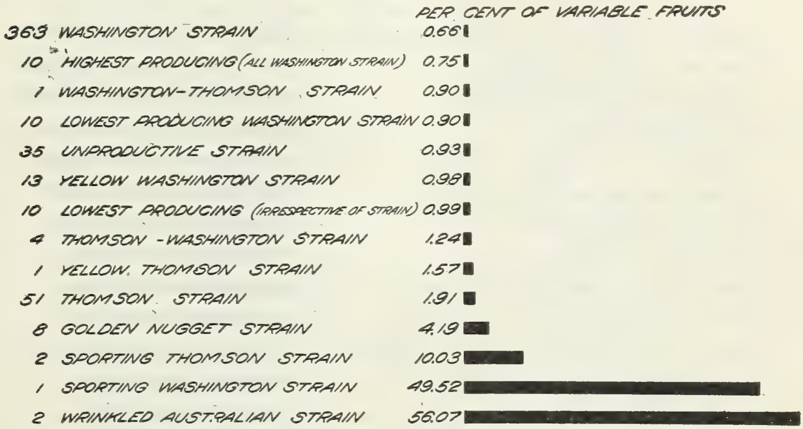


FIG. 14.—Diagram showing the average percentage of variable fruits found on the trees of the different strains of the Washington Navel orange in the investigational performance-record plats during a 4-year period, 1912 to 1915, inclusive. The proportions are based on the total number of fruits produced.

In figure 15 is shown the average weight per fruit of the total commercial crops of all the trees of the different strains in the performance-record plats. Aside from the factor of size, the amount of juice and the thickness of the rind are of importance in determining the weight of the individual fruits. This condition is illustrated by the low average weight of the Australian fruits in this diagram. These fruits usually have very thick rinds and a comparatively small quantity of juice. Therefore, although they are usually as large as the fruits of the other strains, they are lighter in weight and inferior in quality.

Other less important contrasting characteristics of the various strains of the Washington Navel orange have been studied in the course of these investigations. All of these studies have added further evidence of the importance of these strains in their relation to commercial orange growing. All the data show that it is very important to isolate the strains of this variety and, for commercial purposes, to propagate only the best of them.

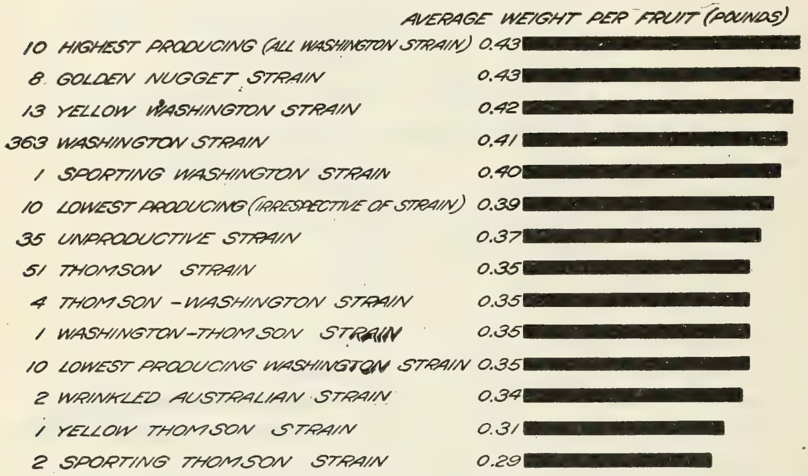


FIG. 15.—Diagram showing the average weight per fruit for the total commercial crops of the trees of the various strains of the Washington Navel orange found in the investigational performance-record plats. These weights are expressed as decimal parts of a pound and are based on data for a 4-year period, 1912 to 1915, inclusive.

COMPARATIVE VALUE OF THE STRAINS.

Any statement as to the comparative value of the various strains of the Washington Navel orange must be understood as applying only to present conditions. What the future of these strains may be under different cultural and market conditions no one can foretell.

Under existing conditions, 2 of the 14 strains are valuable and 3 others are of possible value to orange growers, while 9 are of little or no commercial value. In some cases the inferior strains are not only unproductive, but the poor fruits produced by them are actually detrimental to the general crop of the grove in which they occur, in that it is expensive and sometimes practically impossible to eliminate them during the packing process, and if some are left in the regular pack the crop in which they are found is likely to be discounted in value when marketed.

The Washington strain, so far as production and the commercial quality of the fruits are concerned, is superior to any other known navel-orange strain. The Thomson, as a rule, produces fruits having a smoother texture and better color of rind than the Washington. This improved appearance results in a higher price per box for Thomson than that paid for similar boxes of Washington fruits in some markets. It is generally conceded that Washington strain oranges are of higher quality than those of the Thomson strain. However, the very smooth texture and deep reddish orange color of the Thomson fruits outweigh other considerations in certain markets. In other important markets the Washington fruits command the highest prices, on account of their superior flavor and the texture of their flesh.

A combination of the valuable characteristics of both the Washington and Thomson strains is desired. As mentioned previously, this condition has been found to exist in the fruits produced by trees of the Thomson-Washington strain. This strain is therefore deserving of a thorough test by orange growers.

The Golden Nugget, Yellow Thomson, and Yellow Washington strains possess some characteristics of value, and their fruits are in some respects, under favorable conditions, considered to be of good quality. Small commercial orchards of these strains have been planted by a few citrus growers in California, and the results of these tests will do much toward deciding their ultimate commercial value.

The remaining strains are more or less undesirable and unprofitable in every respect. The causes for this condition are apparent from their descriptions and their comparative performance records, or from both. Inasmuch as commercial orange orcharding is conducted by the growers in order to make a profit on their investment and labor, the propagation of these inferior strains or their continued culture in established plantings should be discouraged.

As a whole, these investigations have shown that the Washington is the most valuable of all the strains, with the Thomson of secondary commercial importance for special conditions of soil, climate, and market, while the others are of little or doubtful commercial value.

THE UNINTENTIONAL PROPAGATION OF UNDESIRABLE STRAINS.

The prevailing methods of securing bud wood of the Washington Navel orange variety have been to cut this wood either from bearing trees in established orchards or, to a limited extent, from young nursery or nonbearing trees. Where the buds have been cut from bearing trees, little or, usually, no selection of parent trees has been practiced. Suckers, or unusually vigorous nonbearing branches, have been used almost universally for this purpose. This practice has led to the propagation of a continually increasing proportion of trees of those strains producing the largest amount of sucker growth. Inasmuch as such trees are usually light bearers and produce inferior fruits, this practice has been unfortunate and is the direct cause of the presence of the large proportion of unproductive trees found in many orchards. In cases where fruit wood has been used for propagation, such bud wood has been cut without any fruits attached, so that in many instances buds from sporting limbs have been used, resulting in the development of diverse strains of trees, as shown by the presence of such trees in the established orchards.

The well-known condition of frequent mixture of varieties in deciduous orchards, resulting from the use of bud wood cut from young nursery trees, where buds from different varieties are likely to be mixed or misplaced during propagation, caused the California citrus nurserymen largely to avoid this practice. For this reason only a limited amount of nursery growth has been used for propagation, and consequently but little mixture of varieties has been found in Washington Navel orange orchards.

The presence in established orchards of trees of diverse strains is the direct result of propagating either from individual trees of these strains or from limb variations in trees of the Washington strain. Because this condition of bud variation and strain diversity was practically unknown until established through these investigations, the nurserymen who used bud wood accidentally cut from the sporting branches of trees of the Washington strain (see figs. 7 and 8) or even bud wood from trees of inferior strains are not to blame for the propagation of these diverse and frequently undesirable strains. However, now that the condition of bud variability in the trees of this variety has been established beyond question, any propagator who does not utilize this information and practice the improved methods for securing bud wood from select trees of the best strains will not be able to excuse the poor results of his propagations on the ground of the lack of definite information on this subject.

THE ISOLATION OF STRAINS THROUGH BUD SELECTION.

Fruit-bearing bud wood has been selected from limb variations occurring in trees of the Washington or other strains, and in several hundred cases where the growth from these buds has fruited every selection has come true. In the beginning of this work, the conspicuous bud variations were top-worked in bearing trees in order to get them in fruiting quickly. Later, as opportunity has permitted, the bud variations have been propagated on nursery stocks. Naturally, the results of these progeny tests require considerable time in order to secure reliable performance-record data. In so far as such trees have fruited, the results have confirmed in every respect those secured by top-working bearing trees. Enough evidence has been secured in these investigations to warrant the statement that in all probability all the strains of the Washington Navel orange can be isolated through bud selection. The isolation of the strains described in this bulletin can be effected either through the selection of bud wood from typical trees in established orchards or from limb variations occurring in bearing trees of the Washington or other strains. In all cases only fruit-bearing bud wood should be used, and one or more typical fruits of the strain desired should be cut off with each bud stick as an indication or label of the characteristics of the bud wood. Figure 16 shows a bud stick of fruit-bearing wood with a typical fruit of the Washington strain attached. The fruits on the bud stick are an indication of the inherent characteristic of the buds from such bud wood and show the probable character of fruit that will be produced by those buds.

The small size of the fruit-bearing bud wood, particularly that growth immediately back of the orange, in comparison with sucker wood growth, has been urged as an objection to its use, particularly if it is necessary to hold the bud wood in storage for some time. These investigations have proved that under proper conditions of storage, viz, sterilized and properly moistened moss and a cool temperature, fruit-bearing bud wood keeps its vitality as well as any other kind of wood. Experience has shown that the use of small bud sticks is as successful in securing a stand of living buds and is as practicable as the use of the larger ones.

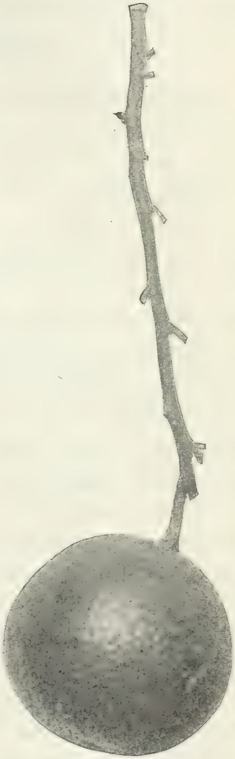


FIG. 16.—An orange bud stick of fruit-bearing wood with a Washington strain fruit attached.

The discovery of the practicability and desirability of the use of fruit-bearing bud wood for propagation purposes came about through a study of methods for isolating the navel-orange strains. Experiments with fruit-bearing bud wood proved that the buds from such wood grew equally well and in most cases better than the buds cut from nonfruit-bearing wood. The growth of the young trees from buds taken from fruit-bearing wood has been equally good in all cases and better in most instances than that of trees propagated from sucker or nonfruit-bearing wood.

The isolation of the valuable strains through bud selection is of vital commercial importance to the entire Washington Navel orange industry. The isolation of the inferior strains is of interest only from the experimental standpoint. The propagation of trees of the valuable strains will result not only in increased production but, what is equally important, in a uniform, improved production of improved crops of fruit of greater commercial value. From this standpoint, the isolation of the best strains is of importance, not only to the grower but to the consumer as well.

TOP-WORKING UNDESIRABLE TREES.

The elimination from established orchards of trees of undesirable strains has been effected by top-working these trees with select buds from trees of the Washington strain.

The selection of trees to be top-worked was made before the fruits borne by these trees were picked. While trees of some of the inferior strains can be recognized from their habit of growth or other vegetative characteristics, it is desirable wherever possible to base the final selection on performance records and the characteristics of the fruits.

The selection of bud wood for top-working purposes was based on individual-tree performance records, associated with an intimate knowledge of tree characteristics secured from careful observations of the trees. Only fruit-bearing wood was used, and for the most part only that growth immediately back of the oranges.

In the trees to be top-worked two or three of the main limbs were selected for budding and two buds were inserted in each limb, one on each side, from 12 to 24 inches above the fork of the trunk. After the buds united with the limbs the wraps were removed, the limbs cut off about 6 inches above the buds, and the freshly cut surfaces covered with grafting wax. The trunks and the remainder of the limbs were covered with a heavy coating of whitewash immediately after the tops were removed, in order to prevent injuries from exposure. The sprouts from the limbs and trunk were removed from time to time, in order that the new tops should be made up of the growth from the inserted buds alone. As the buds developed, their growth was controlled by pruning, so as to form a well-branched top capable of bearing full crops of fruit.

After a year's growth, the stubs of the original limbs were cut off just above the bud union, making the cuts oblique in order to facilitate their healing. All cut surfaces were coated with grafting wax or some other suitable covering, in order to prevent decay and to promote the healing processes. Careful attention should be given these trees for the first year or two, to protect the new growth and to guard against undesirable conditions. Afterwards these trees require no other attention or care than that given the other trees in the orchard.

As a result of these investigations, more than 40,000 undesirable citrus trees in California orchards have been top-worked with buds selected from the most desirable trees in the investigational performance-record plats. The oldest tops grown from these buds are now more than 5 years of age. So far, not a single failure has been observed in transmitting the characteristics of the parent trees by means of the selected buds. The large amount of positive evidence as to the possibility of improving undesirable trees by top-working them with selected buds has resulted in the almost universal adoption of this practice by California citrus growers.

SUMMARY.

The Washington Navel orange is the most important and most extensively grown citrus variety in California.

It was introduced into the United States from Bahia, Brazil, in 1870, by the United States Department of Agriculture. Two trees propagated from this introduction were sent to Mrs. L. C. Tibbets, at Riverside, Cal., in 1873. From this beginning the Washington Navel orange industry has been developed, for the most part within the past 25 years.

There are great variations in the trees and fruit of this variety in California. At least 13 strains possessing very distinct characteristics have been discovered up to the present time.

The objects of these investigations are to determine the comparative behavior of the different strains of the Washington Navel orange variety, to originate and demonstrate methods for their isolation and propagation, to eliminate undesirable trees in established orchards, and to conserve, standardize, and stabilize the variety through bud selection based on individual-tree performance records.

The plan of the investigations is to secure reliable information regarding individual-tree behavior and fruit characteristics by means of systematic performance records.

Individual-tree performance records include a history of the tree, a record of its production, and a description of its fruits and habits of growth.

Bud variations are of frequent occurrence and of great commercial importance in this variety.

Individual fruit variations, such as chimeralike developments and other interesting similar phenomena, are found frequently. Many minor fruit variations have been discovered, and their relation to more important variations is being investigated.

The Washington strain is the most important and valuable one. The Thomson strain is also of value, and the Golden Nugget, Yellow Washington, and Yellow Thomson strains are of possible value for commercial orcharding.

The other eight strains described are probably of little commercial value, and their presence in established orchards is one of the principal causes of the low and poor production of many of them.

The undesirable strains usually have been propagated unintentionally by reason of a lack of knowledge of their existence and importance.

All of the strains described can be isolated through bud selection based on individual-tree performance records. Fruit-bearing bud wood, with representative fruits attached, should be used for propagation purposes.

Established trees of unproductive and undesirable strains have been top-worked successfully with buds selected from the best trees of the Washington strain. A practical method for locating such trees and a discussion of their treatment in commercial orchards is presented in Farmers' Bulletin 794 of the United States Department of Agriculture, entitled "Citrus-Fruit Improvement: How to Secure and Use Tree-Performance Records."

○